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INDUSTRIES OF THE GOLD COAST.

CONSIDERABLE attention is now being paid to the plantations of coffee and cocoa at the Gold Coast, in the cultivation of which, but more especially the former, the natives appear to have become interested. Along the road leading from the botanical station through tho country of Akwapin to the interior, are large numbers of small clearings in which coffee plants chiefly obtained by purchase from the botanical station, are to be seen in the most flourishing condition. The Liberian coffee plant appears to thrive best, but there are large quantities also of the Arabian coffee plant, the berry of which, however, is small and, apparently, deteriorated. The Colonial Secretary, at Accra, says in his last report that it will probably be necessary for the Government at no distant date, if the coffee industry is to be fostered, to instruct tho native cultivators in the proper way of preparing the berry for export. At present the most primitive methods are employed. The berries are scraped, by hand, with a round stone worked in the hollow of a large stone, and after this process they are washed and dried in the sun. It is obvious that a large crop could not be so dealt with, and that the employment of machinery in the near future is imperative. The initiative will have to be taken by the Government because of the general ignorance on the part of the natives of all machinery even of the simplest character, and because no single native cultivator possesses sufficient capital, enterprise, or experience to take the matter in hand. The only manufactures carried on by the natives are manufactures which the necessaries of life have driven them to undertake. The most important is the manufacture of earthenware pots of various sizes, ranging from a capacity of four to twelve gallons, for the purpose of carrying and storing water for drinking and household purposes. These pots are made principally in the country of Shai, which lies behind the trade port of Pram Pram, where the clay is admirably adapted for the purpose. The pots, which in shape are exactly similar to the English glass bowls used by dealers in gold fish, are moulded by hand and shaped by eye. They are baked in the first instance, and are then subjected to a slow wood fire for three days, when if the latter and important process has been properly carried out the pots come out black and hard. Before the pots have cooled each is polished by hand, and for this purpose the covering of the palm kernel is used. This thready covering is heated over the fire in which the pots have been baked, and is then taken in the palm of the hand and rubbed over the outside of the pots. It acts as a varnish and imparts to the pots a brilliancy which may best be compared to a well polished fire-grate. The pots are then packed longitudinally in crates made especially for the purpose and adapted to conveyance as a head load, and are carried to the markets where there is a ready sale for them. The market prices for these pots ranges between one shilling and sixpence and three shillings and sixpence each, according to size. The drying of fish is also a staple industry of the country. All the large sized sea fish caught by the coast fishermen are split open and cleaned. They are then closed and kept in salt water for three days until they begin to get putrid—which condition affords the flavour dear to the natives—when they are again opened and covered with salt, to prevent the presence of flies and other insects. They are then sun-dried, and become ready for food. The herring, which is a common sea fish on the West Coast of Africa, is treated differently. It is not subjected to the cleaning process, as in the case of the bigger fish, but is quickly roasted in clay-made ovens, and then smoked over an open fire, which is arranged on a shallow pit, about one foot in depth. Fish are also salted into barrels. These especially prepared fish are carried to the markets throughout the country, and form a recognised article of native diet. Their presence is soon made apparent, especially in the case of the sun-dried fish, by the putrid

smell which arises from them, and which, as the Colonial Secretary points out, appears to be one of the principal attractions to the unsophisticated native. Baskets and crates, adapted for carrying goods on the head, are extensively made in every part of the colony, and on the coast all the fishermen make their own nets often from yarn which has been manufactured out of native-grown fibre and cotton. In many of the villages of Akwapim and Krobo there are blacksmiths' forges, where rough ironwork is turned out, such as door hinges, door handles, bolts, window fasteners, &c. Mining and working for gold is extensively carried on, especially in Wassaw and Akim. The country is rich in gold, it is to be found everywhere in large or small quantities, and there is no native family in the country without its family gold ornaments of the purest gold and often of artistic workmanship. The insignia of the Court officials of a native king are almost invariably covered with beaten gold, and gold dust among the natives is a common medium of exchange. The natives mine for gold in a very primitive manner; they do not use mercury, and their returns are much smaller than they would be if more perfected systems were adopted. A native miner has but few implements—a long-bladed spud or dagger, a wooden bucket for bailing out the water or hoisting out the stuff, and a bowl for washing or "vanning" make up the list. He rarely makes his shaft more than three feet in diameter. Planting one end of his digger into a recess in the shaft he places the other end diagonally against the opposite side of the shaft, and supporting himself by it his foot is placed in another of the recesses. He then lengthens out his body and fixes his back firmly against the side of the shaft. Thus supported he removes the digger, plants it in another recess below the first, and by repeating the operation gets to the bottom of the shaft. For many years past gold mining on an extensive scale has been carried on by several English mining companies in Wassaw.—*Journal of the Society of Arts.*

A SHORT PROGRESS REPORT ON THE AGRICULTURAL INDUSTRIES OF TRINIDAD ("EXCLUDING SUGAR").

The Agricultural Industries may conveniently be divided into several classes.

Section 1.—Produce use for the preparation of Dietetic beverages.	Section 6.—Fruits.
,, 2.—Cereals.	,, 7.—Spices.
,, 3.—Starches.	,, 8.—Rubbers.
,, 4.—Dyes and Tannins.	,, 9.—Fibres
,, 5.—Vegetable Oils.	,, 10.—Timbers.
	,, 11.—Miscellaneous.

In writing of the various tropical Agricultural Industries, it has not been attempted to arrange them in the order of their relative importance, but to take them *seriatim* as they fall under the heads into which I have, for convenience, divided them.

Section 1.—Produce Used for the Preparation of Dietetic Beverages.

Cacao.—*Theobroma Cacao.*—The success which has followed the cultivation of Cacao in Trinidad is known world wide, and no further words are needed to prove it. If other countries are to follow on the same lines, there are many points which should be most carefully and fully considered, the chief of which are brought to notice in a small book, entitled "Cacao" which is published at the Office of the Royal Botanic Gardens, but would be too lengthy to incorporate in a Report of this kind.

The yearly production by Trinidad for the past five years is as follows:—

Year.	Lb.
1890	*21,552,593
1891	16,188,493
1892	25,041,635
1893	19,106 553
1894	21,608,384

Coffee.—*Coffea arabica and liberica.*—It has been proved that *Coffee of first class quality can be successfully grown in Trinidad*, and the area under cultivation is slowly increasing. Arabian and Liberian varieties can both be successfully grown.

Machinery, which has enabled small planters to prepare their produce with economy has been recently introduced, and other inventions to hand, appear to be well suited to further aid settlers in this matter.

Tea.—*Camellia Thea.*—This does not grow well enough in Trinidad to warrant the belief that it could be profitably cultivated in competition with more favoured countries.

Cola or Kola.—*Sterculia acuminata.*—This product has lately come into some prominence, and the demand for it has much exceeded the supply; consequently, good prices have ruled.

It can readily be grown in the same kind of soil and under the same conditions of climate as "Cacao," and requires almost exactly the same treatment in every respect. The product however, does not require the expensive manipulation which has to be given to Cacao, having to be only well dried, to be ready for shipment.

Planters are now giving some attention to this matter and the demand for plants is increasing.

The industry appears a promising one.

Section 2.—CEREALS.

The principal products under this head that need consideration are Corn and Rice.

Corn or Maize.—*Zea Mays.*—This can be, and is, very successfully grown generally throughout the Colony, and the produce has been proved by analysis to be better and more nutritious than the imported article as generally received. If the culture of Cereals were better understood by the people much larger areas might be brought under cultivation.

As it is, there is a great want of knowledge, as to rotation of crops, and as to the conservation and application of manures.

Rice.—*Oryza sativa.*—Rice of various kinds has been successfully cultivated in the Colony. In some districts, large areas are annually planted.

The produce is of excellent quality and quite equal, if not superior, to the imported article.

Sorghum.—Guinea Corn.—*Sorghum vulgare, Sorghum saccharatum.*—As a grain producer, this plant is exceedingly useful.

There are several well marked varieties of each of the above species, and some are much more productive than others. The plant has been successfully grown in Trinidad. Under the name of "Joär," it is one of the most important rainy season crops of India, forming with rice and wheat the chief staple foods of the country.†

Pistache, Pea Nut, Ground Nut.—*Arachis hypogea.*—This has been successfully produced on rich sandy soils, in the Siparia and other districts of Trinidad.

It produces an oil said to be a good substitute for olive oil, and often sent into the market as such.

The cultivation, so far as I can learn, is not extending.

Pigeon Pea, Congo Pea.—*Cajanus Indicus, Spreng.*—This is probably one of the most useful legumes cultivated, and it answers well as a rotation crop with Sugar Cane, Corn, &c. It is most successfully cultivated in Trinidad, as well as other West Indian Islands.

* The fluctuation in the annual production is caused by crops like that of 1891 being late and shipped in following year.

† Church in "Food Grains of India."

Legumes.—There are many other leguminous plants which are successfully cultivated, and are especially useful for restoring nitrogen to the soil, as rotation crops; but they are so commonly known that it would be useless to discuss them here.

Section 3.—STARCHES.

The starch-producing plants are many, but they have so frequently been "trotted out" before the public at exhibitions that the majority are well known.

CASSAVA OR MANIOC.—*Manihot aipi Pohl*, and ARROWROOT.—*Maranta arundinacea.*—The first is a staple food for thousands of people in Mexico, Central and South America, and the West Indies.

The *Tortilla* properly prepared in Central American style, is a food which may be taken by the most delicate, relished by the most prejudiced, and enjoyed by the most particular connoisseur of dietetics. *Cassava meal* or *Farine* is also largely used in various ways. The starch of this plant is in common use throughout the West Indies. The plant is successfully grown in Trinidad and must be considered an important minor product.

Of the latter plant no large quantity is grown in Trinidad. An idea prevails that Arrowroot cannot be successfully cultivated.

This appears to have arisen from the fact that the variety generally grown is a very inferior one.

It has been successfully shewn by the Botanical Department that when a superior variety is planted the produce is abundant and of first class quality.

Section 4.—DYES AND TANNINS.

LOGWOOD.—*Hæmatoxylon campeachianum.*—One of the principal products in this class is Logwood, which forms so considerable an article of export from many West Indian and Central American Ports.

It is fully proved that Logwood of first class quality can be produced in Trinidad. Shipments made to European markets of wood grown in the Colony, realized prices above that obtained by any other West Indian Islands, viz.: £7 16s. per ton.

This proves that our wood is one of the best quality and can be grown to perfection in our lands.

It grows on poor as well as rich soil, but reaches a larger size most quickly on the better lands.

Once trees are established they will produce self-sown plants over a large area, and the plants require little or no protection from stock. (See Bulletin, articles 35 and 105).

DIVI-DIVI.—*Cæsalpinia coriaria.*—This a well known tree, which produces seed pods used for tanning purposes.

It grows well in Trinidad and affords an article which has considerable repute. A large quantity is annually imported into European markets, and it obtains fair prices

GAMBIER OR GAMBIR.—*Uncaria Gambir.*—This plant has only recently been introduced, and so far, I believe, only Dominica and Trinidad has succeeded in establishing the plants.

It forms an article of export from the East Indies, and the possibility of our being able to produce it economically in the West is a question which only careful experiment can solve.

ANNATTO.—*Bixa orellana.*—Some of the finest kinds of Annatto have been introduced to Trinidad where it has beed as well grown as in the French Islands, which are the seat of the greatest production

There would be no limit to the production, if the prices were such as would give good returns for its cultivation, collections, and preparation.

MYRABOLANS.—*Terminalia of species.*—These trees grow to a large size in Trinidad, and probably yield as much produce as in the country to which they are indigenous. Little attention is required after the first planting, and the collection of the produce is simple.

MANGROVE.—*Rhizophora mangle.*—This indigenous tree yields a bark which is excellent for tanning purposes, the only apparent objection to its use being the somewhat fanciful one of its giving the tanned hides a red colour.

Good "Cutch" can readily be produced by a simple operation. From the Mangrove lands of the Gulf of Paria is obtained the greater part of the fire-wood used in the city of Port-of-Spain.

No cultivation is required.

TURMERIC.—*Curcuma longa.*—This plant produces a well known yellow dye. The roots are locally known as yellow ginger and are in demand among the East Indian immigrants, for curries, &c.

It has been most successfully grown in the Royal Botanic Gardens, Trinidad.

FUSTIC.—*Maclura tinctoria.*—This plant produces a yellow dye. The plant is indigenous and grows to a large size in Trinidad. It is valued at from 60/- to 105/- per ton at this date.

Section 5.—VEGETABLE OILS.

COCONUT.—*Cocos nucifera.*—The process of extracting oil from the Coconut is well known. Large areas of land are cultivated in Coconut groves in Trinidad, and the export of nuts is a large one. Several oil factories are now working and the oil made is of excellent quality. The meal or cake produced when extracting oil is of first rate quality, and very suitable for feeding cattle, poultry and pigs.

CARAP.—*Carapa guianensis.*—Carap or Crab oil only needs to be mentioned. Better methods of extraction than those at present in use are urgently required.

LEMON GRASS OR CITRONELLA.—*Andropogon schœnanthus.*—An essential oil can be distilled from the Lemon grass, which flourishes readily here.

ORANGE.—*Citrus aurantium and other species.*—Essential oils of Orange, Lemon, &c., &c., of high quality have been produced in Trinidad.

BAY TREE.—*Pimento acris.*—From the leaves and fruit of this tree is produced the celebrated Oil of Bay so much used in the composition of hair washes, &c. It is indigenous to Trinidad and grows well in almost any soil. The oil is easily extracted.

CLOVE.—*Caryophyllus aromaticus.*—From the leaves or fruits the essential oil of cloves is readily produced by aqueous distillation, the trees introduced in 1818 have reached a large size, and annually yield crops of fruit.

NUTMEG.—*Myristica moschata.*—From the fruit of the Nutmeg tree two kinds of essential oils are produced, namely that from the nut, and that from the mace which surrounds the nut.

Many other oils, natural, as well as "essential" can be readily produced.

Section 6.—FRUITS.

BANANA.—*Musa sapientum.*—Eight years ago it was scarcely possible to find the kind of fruit known as the Gros Michel or Jamaica Banana (the principal kind exported from Jamaica) in any district of the Island of Trinidad. The attempt to induce planters to grow it was so far successful that the larger portion of 40,000 plants imported by the Government were taken up by them, and large numbers were afterwards sold from Government Establishments.

For an Island, practically without a suitable fruit to export, to at once develop a fruit trade was not to be expected, and the attempt made in 1889 to set such an enterprize astir, has succeeded, if not as fully as was expected, yet it has resulted in preparing us more effectually for any future effort that it may be necessary to make.

To-day can be purchased in the markets, fruit, that six years ago might be looked for in vain. At that time, little else was known here but the small varieties of fruit utterly unsuited for export, but now the demand for the better and larger variety is general among the people; and there are few indeed who do not know the Jamaica or Gros Michel Banana, and I look forward to the time when they will be generally cultivated both for home use, and for export.

Opinions differ as to the practicability of exporting fruit from Trinidad. Our first shipments consisted of small lots of fruit, inferior in size and badly packed, which naturally sold—outside the ring—in New York at low prices.

If we had had large cargoes and sent them by fast steamers, well packed, and had sold them, inside the ring; I am of opinion the result would have been different. But even this shipment would lead

one to believe in ultimate success, for if such fruit reached New York, in good or even fair condition, as it is known to have done, it is easy to see, that it is practicable to get it there in much better order on a five days' steamer, than on one which takes ten or twelve days.

Moreover, sufficient fruit was not forthcoming at the time. It was not to be had in the Island; and we have practically now, (even after the importation of such a large number of plants by the Government) only the nucleus, for commencing the growth of the banana on a scale suitable for export.

Abandoned sugar estates lands are not always the best lands for bananas, though much available land of this kind may be well suited for the purpose To ensure success in banana growing and shipping, several points are necessary: 1st—Suitable land. 2nd—Easy access to Railway of Port. 3rd—Quick despatch, and fast ships, and Lastly—Interested persons; not competing against formidable rings, to sell them for you in the American market.

ORANGE, LEMON, &c.—*Citrus. sps.*—Oranges of several varieties grow well in Trinidad especially in the valleys of the Northern range of hills.

The Tangerine and St. Michaels varieties both produce highly flavoured fruit equal to any in the world. The St. Michael Orange could be exported if the supply were sufficient, but it is as yet hardly equal to the local demand except perhaps in some few districts.

I consider there would be no difficulty in growing oranges in Trinidad for the American Market provided that proper arrangements are made for their shipment and sale.

To make it pay, the proprietors must allow the New York Ring to obtain an interest in the matter, and to see that it does not militate against New York trade, on the lines already established.

The same remark applies to lemons, which are grown here from European seed of excellent quality.

I apprehend no special difficulty in sending oranges or lemons to the American market in good condition. Parcels have, we are fully aware, arrived in bad condition. That does not prove that the Trinidad orange cannot be carried safely, but simply proves that the shippers did not know enough of the business. To pack fresh gathered oranges in barrels or boxes in damp weather without drying is certainly not the means to adopt to get them safe to market. Oranges to go safely, must be gathered and packed in dry weather; must be handled as if they were eggs, and must be well dried before packing, in chambers where they can be placed in single layers. In our dry season from January to April, excellent oranges can be had, and oranges too of a flavour quite equal if not superior to the well known Jamaica orange.

Section 7.—SPICES.

VANILLA.—*Vanilla planifolia* has been successfully grown in Trinidad, and the native species give a saleable product. The cultivation of this product has not yet assumed proportions to place the article upon the export list.

CLOVE.—*Caryophyllus aromaticus.*—This tree grows well but does not pay for harvesting the crop in Trinidad.

GINGER.—*Zingiber officinalis.*—Has been successfully grown of excellent quality.

NUTMEG.—*Myristica moschata*—Nutmegs when planted in suitable situations, produce regularly good crops, and realize good prices.

Trees in the Botanic Gardens, yield crops valued at £2 each, annually.

CINNAMON.—*Cinnamomum Zeylanicum.*—Grows well, none exported.

Section 8.—RUBBERS.

RUBBER.—Rubbers of several kinds have been planted, but preference is given to *Castilloa elastica* or Central American Rubber. This has succeeded admirably in several places, and a systematic outlay would probably give ample return. No export of produce has yet been made, but our trees have now reached a size when it will soon be practicable to crop regularly. Thousands of trees have been sold, and I learn good success has attended planting in nearly every case, this is corroborated by the demands for more plants.

I look forward to a great future for this Rubber in Trinidad.

Hevea braziliensis, or the tree producing Para Rubber, also grows well in Trinidad and might be useful, but it does not come into crop so early as the *Castilloa* and does not, so far as I have seen, give an equal yield, until it becomes of very large size.

Castilloa Rubber can be planted 200 trees to the acre. These will yield on good land at the 7th or 8th year some two to three pounds of Rubber per tree: and will give an increased annual yield.

Three pounds at 2/- × 200 = £60. Present price—1/9 to 2/1¼.

The planter can decide for himself whether this would be profitable or not. The visible sources of supply show a decrease, and prices rule high and regular. Hevea or Para Rubber takes longer to bear, but the quality is said to be better, and prices rule higher than for the product of the Castilloa.—3/- to 3/1.

Section 9.—FIBRES.

FIBRES.—The best kind of plants for producing fibre have been successfully introduced, and are now growing well in many places in the Island. Several machines have been tried, but we yet want a machine of economic character. We have a native fibre, *Abutilon periplocifolium*, which can be most successfully grown. It strips easily, and the raw material can be baled and sent to Europe; I believe there is a great future for this fibre; 1st from the ease with which it can be grown, 2ndly from the facility with which it can be prepared for shipment without machinery, and thirdly, from the ease with which it can be shipped as raw material to be prepared at home by flax machinery. It is to be compared with the best Jute.

COTTON can be very successfully grown, but it gives such a poor return in comparison with other crops that no one grows it.

HEMP.—*Agave rigida var Sisalana.*—Sisal hemp plants of the true kind are growing well in many places throughout the Colony and we cannot doubt the possibility of producing large quantities of material if the success of the culture in other colonies would warrant extension of the area.

Section 10.—TIMBERS.

Many people think it ridiculous to plant timber trees, but when we know that the visible supplies of many kinds are yearly decreasing, it would appear to be a safe investment to spend money on the cultivation of forest trees of the best kinds. In Trinidad, wherever planted, the cultivation of timber has proved a success, but it is the absence of a quick return, which at present, (and we fear will continue to) militate against any proposal to cultivate timbers on a large scale.

On estates however where other cultivations are in progress, it would be easy and inexpensive to start groves of quick growing timbers, whose growth in a few years would pay the proprietor a hundredfold for his outlay. It is indeed sad to witness the desolate look of some estates, on whose broad expanse not a tree is to be found, except perhaps round the homestead, where they serve the purpose of wind-breaks, and like

"Imperial Cæsar, dead, and turned to clay,
"May stop a hole, to keep the wind away."

An estate planted with *Mahogany* and *Cedar*, would pay better, once established, than the best forest land of Europe; *Cedar* may be taken to grow 1½ inches in diameter per annum, *Mahogany* 1 inch. I can show trees planted eight years ago giving these measurements. After twenty years they will probably make an average of half an inch per annum for Mahogany and three quarters of an inch for Cedar. The supply of Furniture woods to European markets is daily becoming smaller, and there would be a mine of wealth in a well established area covered with such woods as *Purple Heart*, *Mahogany*, *Cedar*, and others.

Section 11.—MISCELLANEOUS.

Cinchona Barks cannot be grown to advantage in Trinidad as there is very little suitable land for the purpose. On the hill areas, Succirubra or Red Bark would thrive.

Tobacco.—A good quality of Tobacco has been successfully produced in districts where "vega" lands are available

Sarsaparilla has been successfully grown of excellent quality.

General Remarks.

No one can, or wishes to deny, the importance of the Sugar interest to the West Indies, but its maintenance appears to depend a great deal upon how long European Governments will maintain the bounty upon the production of sugar from the Beetroot. In a fair fight there appears to be not the slightest doubt but that cane sugar can hold its own; but if the bounties are continued which give beet an advantage, the cane sugar industry (unless something wonderful intervenes) appears doomed, and what can replace it? This alas! is a question which has been often asked, and perhaps, never yet satisfactorily answered. Something new is required, but it is quite certain that no one can miraculously devise a "branspan" new article of export which will at once step in and take the place of the Sugar cane, or it would have been done long ago. People engaged upon prominent industries seldom find time to do more than to look well after the immediate work they have in hand, and considerations for the future, practically have but little place, until disaster is clearly foreshadowed. While all goes well, they "blow cold" on experiments undertaken in any other direction but their own, but as soon as difficulty comes, they are quite willing to "blow hot" upon anything advanced, in the hope of a solution of their troubles.

The Botanical Establishments of the West Indies, have, for many years past taken up the economic question of substitutes for current cultures, in view of their possible failure; and careful examination has been made into the various suggested means.

Numerous importations of plants have been made from all parts of the world, and cultivations hitherto carried on in the East, have been tried in the West.

There does not, however, appear much likelihood of our taking up the growth of any special Eastern produce, for the simple reason that we are at once placed in competition with East Indian cultures, and we know by comparison that the labour supply in the East and West favours production in the East, and unless disaster or disease sets in Eastward, there is little hope for the West successfully entering into competition, in the cultivation of the various products which can be grown equally well in both quarters of the Globe. This being so, the cultivator turns to the products of the West itself, in the hope of finding suitable ones for his purpose, and it is probable that his search in this direction has more hope of success; for it will be seen that our most promising substitutes are really Western products.

To fix upon articles in regular demand he first turns to "*Food supplies*" and secondly to "*Manufactures.*"

Now the greater number of articles of tropical production are not "*Food supplies*" and failing Sugar, Cacao, and a few others, he can only rely upon the demand for the supplies of raw material, for supporting "Manufactures.." The demand for manufacturing material is neither so constant or so regular, as the demand for Dietary articles, and careful examination is needed in selecting an industrial product that gives the producer the greatest security. Turning to a list of Tropical productions, (well seen in the pages of the "Public Ledger,") we find them very numerous indeed, and at first sight, it appears that it would not be difficult to find a substitute for any failing Industry, but planters know to their cost how much disappointment meets them at every turn in their attempt to do so. It thus appears that the only course left is to find out, *what can really be well grown*, and whether such is likely to have a steady market in the future, and whether the demand is from any cause increasing or diminishing.

I give a list of products, many of which might possibly be grown at a profit; but it must be clearly understood, that I do not for a moment suggest them, as in any way capable of at once becoming substitutes for the Major Industries; but simply mention them with a view of *pointing out the possibility* of turning attention to them in a profitable manner, should our present cultures fail. It will be noted that possible productions other than those legitimately belonging to Tropical Agriculture are not mentioned, viz.: Mining produce, Manufactures, &c.

List of Products.

Arrowroot. .. Can be well grown.

Balata. .. A native product. A Balata forest 50 years hence would be a mine of wealth, both for gum, and for wood.

Bones. .. What is done with waste bones?

Canes—Bamboo .. Bamboo cane can be grown in unlimited quantity here.

Citric Acid .. Large supplies can be produced from our Limes.

Cinchona Bark. .. Would grow at 3,000 feet, but we have little land at that height.

Cochineal. .. Easily produced.

Cacao. .. Trinidad is in the front rank with this product.

Coffee. .. Can be well grown of first class quality.

Coir. Coconut. No attempt made to utilize it to advantage.

Copra. Coconut. .. Worth £13 per ton. Coconuts sell at 20 te 30/- per 1000.

Corosos. Ivory Nuts. .. Thousands of tons could be easily grown. £6 to £9 per ton.

Cotton. .. Grows well, difficult to compete with old established countries.

Cutch. .. Fine "cutch" can be made from our Mangrove bark.

Divi Divi .. Grows well, worth 8/- to 11/- per cwt.

Dragon's blood. An indigenous tree produces this, growing in our swamps, worth £6 to £12 10 per cwt.

Drugs:

Aloes. .. Can be well grown and manufactured here, worth from 15/- to 95/6 per cwt.

Areca Nuts. .. Grow, well, but waste on the ground, 8/6 to 12/- per cwt.

Balsam Capiri. A native tree, produce worth 1/- to 1/7 per lb.

Balsam Peru. Grows well here, worth 9/- per lb.

Beans, Tonquin .. Grows well, cannot compete with forests of Venezuela.

Cardamons. .. Grows well, and produce freely, worth 1/4 to 3/9 per lb.

Kola or *Cola.* Worth 1/5 per lb. Grows freely.

Nux Vomica. Worth 5/- to 8/- per cwt.

Oils Essential— various. Can be well produced.

Sarsaparilla. Can be as well grown here as anywhere in the world, 1/2 to 1/5 per lb.

Fibres:

Abutilon .. A first class fibre, easily manipulated and promises best of all.

Sisal .. Can be grown of first class quality.

Fruit:

Bananas, *Oranges*, *Lemons* } Already discussed.

Gambier .. Just introduced, production would have to compete with East Indian.

Gum Kino .. This tree does well here, and samples of good gum have been produced, at present quoted at £20 to £25 per cwt.

India Rubber:

Castilloa .. 1/9 to 2/11½ }
Columbian .. 1/6 to 2/8 } per lb.
Hevea or *Para* 3/- to 3/1½ }

Myrabolans .. Trees grow large and very quickly worth 3/6 to 8/- per cwt.

Oil, Coconut	Large quantities produced in Trinidad.
Rice	.. Can be well grown.
Spices:	
Mace *Nutmegs* *Cloves* *Cinnamon* *Ginger* *Pepper* *Pepper Long*	
Tamarinds	.. 17/- to 20/- per cwt.
Topioca	.. Made from Cassava Starch, could be well made here if desirable.
Tea	.. I don't think we can compete with Ceylon, the plant grows here, but does not thrive.
Tobacco	.. Good Tobacco has been grown here, and Cigars have been made of excellent quality.
Turmeric	.. Can be well grown.
Vanilla	.. Can be produced of good quality.
Bee's Wax	.. Honey and Wax both produced here.
Wood:	
Logwood *Fustic* *Lancewood* *Mahogany* *Cedar* *Furniture Woods* *Purple Heart*, &c.	Can all be well grown.

In the foregoing list I have pointed out numerous articles that might be grown.

The circumstances which militate most against the introduction of new industries are those which are chiefly generated by the action of those who monopolize the Major Industries, in whose hands for the part rests the Legislation and Government of the Colony, Minor, Subsidiary or New Industries having always (as must be confessed is natural) to take a second place. Under these conditions, it is only when the tide turns, that they receive the attention they fully merit as industries which tend when combined as a whole, to the stability of the Colony. The Botanical Departments of the various colonies are always ready to afford the planter the benefit of any knowledge or experience they may have obtained. but they would not attempt to persuade anyone to enter into cultivation of what are called "Minor Industries," if the larger ones pay them better. Most certainly and emphatically No! But instead, it is for them to respectfully direct the attention of all planters in times of prosperity, to all such industries as may keep them from the serious error of carrying "all their eggs in one basket"

Probably the most encouraging of the so called "minor" or "subsidiary" industries are:—*Rubbers, Fibres, Cola, Dye-woods* and *Timbers.*

J. H. HART, F.L.S,

22nd May, 1895.

NYASSALAND AND ITS RESOURCES.

(From a Correspondent.)

COFFEE-PLANTING.

Coffee-planting, although still in its infancy, may be looked upon as the chief cause and support of our prosperity in Central Africa. Nyassaland coffee last year fetched the highest price in the London Market. The prospects of coffee-planting in British Central Africa are excellent at present, and the industry will have a great future, when more capital has found its way into the country. Even now, compared with coffee-planting in India. Its cultivation in Nyassaland offers advantages to the planter. The conditions of the country would seem to be admirably suited to coffee. There is an abundance of running water in all the coffee districts. This is an absolute necessity for the washing process. The fertile slopes of the Shiré Highlands and Mlange are covered with a rich soil which contains every element necessary for the healthy growth of the plant, and as yet the coffee disease has not made its way into the interior, although it has appeared on the coast of German East Africa and in Natal.

CHEAP LABOUR.

The greatest advantage of coffee-planting in Central Africa is the abundance of cheap local labour. Plantation work is very popular with the natives who live in the neighbourhood of coffee estates, while now that the country is quiet, people will come on foot for hundreds of miles to obtain work. Under their *capitaos* or native *maestries*, many of whom come from curious little colony of Mahomedans on the Lake, the coolies are admirably workers, steady, willing, industrious, and extremely cheap, 3s. 6d. a month being the cost of each adult male cooly to the planter. Land, of course, is excessively cheap, and a plantation cleared in May is planted the following December, the planter getting his first crops at the beginning of the third year, while in the fourth he may reasonably hope for a large return for his outlay. At present only the washing and pulping is done in the country, as there is no machinery for peeling and garbling in Central Africa, but some energetic planters have already set on foot plans for importing all the necessary machinery, which will shortly be established at Torona. At present the porterage is the difficulty. Parts of the Shiré above Chiromo are unnavigable, and now the whole of the exports and imports of Central Africa are carried on the heads of native porters, some 10,000 natives being engaged in the transport of goods.

TRANSPORT DIFFICULTIES.

They are, however, difficult to obtain, though cheap. The great want of the coffee planter is a railway from Chiromo to Blantyre; and it is easy to understand that those who have had the fruits of years of waiting and toil, detained perhaps for six months on the Shiré bank waiting for coolies, would gladly pay double to ensure their safe and speedy transport by rail. It is in fact a matter of life and death to the planter to get his produce out of the country before the heavy rains set in in November. It will, howevor, not be long before this dream is realised, as a company has already been formed, and a railway will shortly be laid down from Chiromo to Blantyre, which, it is hoped, will soon be extended to Matope, higher up the river.

CLIMATE.

The Shiré Highlands, with Blantyre and the Mlange Districts, are at present the chief seats of coffee-planting, and both are admirably adapted for colonisation; these districts being over, 5,000 feet in latitude, while parts of Mlange reach 10,000 feet. The upper Mlange plateau is very wet, with a rainfall of nearly 75 inches; otherwise the climate is perfection, as regards temperature, and very bracing. The S. W. plateau has the makings of an ideal sanitarium. Its clear air and exhilarating climate would give new life to the visitor from the heated plains, and its acres of rolling grass land afford excellent pasturage for horses, cattle, and sheep, which thrive there. Many European vegetables will grow there. It would, in short, be a favoured hill station, which would eclipse any in India, except perhaps Ootacamund, surrounded as it would be by breezy downs, with a splendid natural race-course and polo-ground, and all these advantages being obtainable within two days of Blantyre.

HOW THE COFFEE TREE BEARS.

There are, however, some difficulties to be overcome as regards Central African coffee-planting. The coffee shrub, although a native of Africa, is not found wild in Nyassaland, and does not grow there yet as it should, and as it grows in Ceylon. In Central Africa the tree at its first bearing produces an enormous crop of berries on the horizontal branches, but these then die off, and the tree, though it increases in height, bears very little more. It is then cut down, and at least two years must ensue before the new shoots make their appearance on the old roots. It is, however, hoped that by some new

process of pruning or manuring the coffee tree may in time give secondary branches which would rapidly increase the profits. The Nyassaland coffee, strange to say, was introduced into the country from Scotland by Mr. Buchanan, C. M. G., who brought a small plant from the Botanical gardens at Edinburgh. From this plant, which is still in existence in the mission grounds at Blantyre, all the trees in Nyassaland are descended.

There are, of course, at present very few so-called town-ships in Nyassaland. These are Chiromo, on the Shiré, Blantyre, the capital of the Shiré Highlands Fort Herald, Fort Johnston, and Fort Lister. Of these Blantyre is the most advanced. It is a picturesque little settlement of some thirty European houses, in the centre of the coffee-planting district, surrounded by plantations, beautifully situated beneath the hills in a well-wooded country. The climate is remarkably healthy.

DISEASES OF CATTLE.

There are difficulties which seriously impede the progress of colonisation in Nyassaland. First and foremost among these is the unhealthiness of portions of the country for cattle and horses. Horses die of the fatal lung sickness, which often clears off numbers of them, and they and the cattle die from eating certain poisonous plants that spring up at the commencement of the rains. Then there is the belt of tsetse-fly, fatal to all quadrupeds which come from without. It is a small grey fly, like an ordinary horse-fly, with crossed wings. It is the curse of the country. Were it not for the tsetse-fly the difficulties of colonisation and of extirpating the slave trade would be lightened a thousandfold. Were it not for this pest the whole country could be kept under control by a few troops of mounted police. Fortunately the tsetse-fly never appears in the hills or near the rivers, so that horses can be brought by boat up to Katunga. The following belt of country is also free from them, so that the horses can be taken in safety to the Shiré Highlands.—*Times of India.*

WHAT WILL NORTH BORNEO'S CHIEF EXPORT BE?

The cultivations from which we have to choose in seeking an answer to this question are coconuts, coffee, cotton, Manila hamp, rattans, sago, sugar and tapioca. To commence with:

Coconuts.—The demand for coconuts and their products is little understood in England where when an intention is announced of planting up say 20,000 fresh trees, people ask "are you not afraid of overdoing the supply?" it being supposed that the chief destiny of the coconut is to be sold in half penny slices to little boys with strong digestions, or to be given as a prize at Aunt Sally.

Coconuts are a large article of diet throughout the Tropical East, constituting the main ingredient for giving extra flavour to rice and curry; coconut oil is largely used as a luminant; while in the form of copra Europe imports enormous quantities of the dried kernel; the number of the nuts required for affording fresh oil for women's hair is very large, and coconuts or their products are in request for a dozen other minor purposes. Some hint of the demand may be gathered from the fact that Europe last year took from Singapore alone *cwt. 1,000.893* of copra besides the quantity shipped from Java, the Philippines, Ceylon*, &c.; the rice-eating people of the tropical East increase in a manner difficult if not impossible to estimate, all of them with a fondness for coconuts, while as a luminant it may be noted that when the price of kerosine oil rose the other day the retail price of coconut oil rose, too, several cents a bottle in Singapore. It is now recognized that the oil fields of America are exhaustible, what will the effect on coconut cultivation be when this begins to be felt? But as it is, the present always enlargening demand for the various purposes mentioned caused by an increase of some millions of consumers yearly, most of whom live in districts where coconuts do not grow, calls for a supply that is barely met by the number of fresh trees planted yearly as is testified to by the fact, that copra has stood for months past at a price nearly $1½ per picul higher than it commanded up to some three years ago.

Now the coconut is a particularly easy tree to grow requiring little up-keep after 30 months of age except from cattle (which also are profitable to raise) and the amount of coconut land, particularly in the district of which Sandakan is the place of export, is very large, capable of growing some millions of trees.

I think it may fairly be prognosticated that some time in the future the coconut oil making industry will assume enormous proportions in Sandkan Bay. A few coconuts have been put in in different places round the Bay, though not really many but it is at all events satisfactory to know that planting is always in progress.

Coffee (Liberian).—The amount of Coffee land in North Borneo is very extensive; if millions is rather a large word to use, at all events commencing from the rich soiled hills of the Segama and proceeding north-wards there are several hundreds of thousands. A start has been made in coffee planting in the country though on a comparatively small scale so far, but in two or three places the growing trees can be seen, gigantic in size and with their branches bending and cracking with the weight of fruit. No doubt South America is a strong competitor in production, but the consumption increases yearly (though not in England where the making of a cup of drinkable coffee is amongst the lost arts, and people spoil their digestions with raking Indian tea) but Europeans fight shy of South American, where at the worst you get your throat cut or are bombarded, while at the best your coolies are all liable to be called out for military service and the estate left to take care of itself, and let it be once widely enough known that there is a British protected State, virtually a British Colony, in which coffee can be successfully grown, and where wages are cheaper than in Brazil, and there will be no lack of intending planters.

Our coffee is quoted at 84s, per cwt. on the London market as against 68s. the price of fair ehannel R10 (Arabian).

Cotton.—An enormous expansion of the cottongoods making industry is in progress in China and Japan, and the suitability of North Borneo cotton for the mills has been most favourably reported upon, especially in comparison with Chinese. A large proportion of the cotton imported into Japan comes from Bombay, but we are much nearer Japan than Bombay is, while as against cheaper wages in India must be put the land tax for one thing and the expense of bringing the cotton from up country to ship's side there for another against *no* land tax and the sending of the cotton bales direct from the estate packing house to ship's side here, (*when* there is a cotton estate, at present there is not one). When this cultivation is commenced in earnest there are the prospects of a very large business as our cotton possesses several advantages, caring little if any thing for weeds and lasting for at least three years without replanting; one started in fact the expence of up-keep is very slight and little else has to be done but pick the crop as it ripens. The main difficulty I foresee is from deer and wild cattle which are very fond of the plant, but at the worst all that would be required would be wire fencing. However, our information on the subject of cotton is not yet complete enough to allow one to speak about it with quite the same certainty as about other things.

Gambier is a product which seems particularly adapted to North Borneo, owing to its demanding large supplies of firewood in the vicinity of the boiling house and to the need, it having hitherto been a low priced article, of cheap transport for it.

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* By reference to another column it will be seen that Ceylon's export of coconuts and their products totals over 50,000 tons a year on the average of late years.—EDITOR.

In few countries other than Borneo can a conjunction of these two advantages be effected. (The need for constant rains debars it from being grown in any country that has marked seasons). The export from Singapore has slightly risen during the last 10 years moving from 712,000 cwt. in 1886 to 812,000 cwt. last year; the price used to range from $4.50 to $6.50 per picul and at these prices the "gambier and pepper" hongs made enormous fortunes (in a great measure due to pepper however it must be confessed), but during the last few months the price has much gone up, and as I am assured at the gambier gardens here that our plants yield a first crop in two or three months less than in the Straits and also that the leaf matures again ready for picking in 3 months as against 4 there, it seems more likely gambier gardens will be opened here. As the forests get cut down for boiling purposes in the districts in the Straits and Islands where it is now made (as they are rapidly being done now) a gradual transference of this industry to Borneo is inevitable.

Manila hemp on the average year by year shows no great change in price while the export does not increase very fast, which seems to denote that we shall have to directly compete with and undercut the Philippines instead of merely becoming a fresh feeder to an increasing demand as in the case of copra, coffee, sago and other things. At present we lack a sufficient supply of properly qualified labour, but when we can show plantations of hemp large enough to guarantee uninterrupted work I think there will be plenty of workmen offering, at present owing to various causes we cannot do this and in fact the industry is in its extreme infancy, but that we can grow Manila hemp just as well as the Philippinos there is no question, and in view of the harsh government and heavy taxes and exactions upon everything and everybody there, there is no reasonable doubt but that this industry also will gradually come over to North Borneo. Not to go any further, the export duty of $1 a picul charged in the Philippines gives us a 10% advantage at once. In the philippines it is mainly a "cottage" industry, the plants being usually grown in fields by "small" holders who bring the hemp to the towns where it generally passes into the hands of a middleman who passes it on to larger towns, sometimes on through consignment, sometimes to the agent of an open port firm, and in the event the hemp will sometimes travel once on a pony's back and twice in coasting boats, and pass through the hands of two middlemen and one merchant before finally being exported, all of which operations mean additional charges or profits, which however per contra means that the original producer there can make it very great deal cheaper than we can at present, but the fact that we can send direct from the estate to ship's side and without an export duty must tell in time. MYNAH.

—*British North Borneo Herald.*

HARDY BAMBOOS.

Mr. Freeman Mitford's paper at the Royal Horticultural Society on Tuesday last proved one of the best and most interesting lectures that have been read before the Society. He had a grand subject and a novel one, and he handled it with the ease and knowledge begotten of enthusiasm and experience. It was by no means a compilation or a paper "made to order" or to fit an occasion. It is a matter for regret that it was not illustrated, either by specimens or by drawings. The Society, as too frequently happens in such cases, missed an opportunity. Nevertheless, when Mr. Freeman Mitford's paper comes to be read in full in the *Journal* of the Society, there is no doubt it will give a great impetus to the culture of these graceful and singular plants, and the Bamboo-garden at Kew already furnishes an excellent object-lesson open to the community at large.

We are apt to associate Bamboos with something tropical, and dimensions too gigantic for and ordinary English garden. Mr. Mitford's paper will do much to correct this imperfect judgment. Big Bamboos there are, and many of them far too gigantic and much too tender ever to find a place in British gardens, but Mr. Mitford gave a list of between forty and fifty species and varieties, all of which are of suitable size, some dwarf, and adopted for carpeting the ground beneath trees, and all more or less hardy. Indeed, after a winter which has in mnay parts of our islands destroyed even the common Gorse, Mr. Mitford is able to say that not one of the species entirely failed. Nothing worse than a severe check has occurred, a check resulting in the formation of a sheaf of small canes, but richly provided with luxuriant foliage.

Mr. Mitford gave some excellent advice as to the necessity for not planting out the Bamboos till they have recovered from the effects of their removel from their native countries or gardens where they have been grown. When received, the roots should be soaked in water for twelve hours, and then potted. They should then be placed in a cool-house, and but little water given at first. In February the buds begin to swell, in March the leaves appear. Water should then be afforded freely. In May the pot-plants may be hardened off, and at the end of the month they may be planted out in their permanent quarters, which should be duly sheltered from their deadly enemy—wind. In handling the plants the greatest care should be taken not to injure the roots, nor the points of the shoots, which are very brittle. They should not be trodden in, but the roots well watered-in so as to enable them to get firm hold of the soil without risk of breakage. The soil should previously have been well double-dug. By preference it should be a rich loam, and the plants mulched with cow-manure. Wire netting may be provided toward off the attacks of rabbits or pheasants. A little fern or bracken thrown over the stools in winter might be advisable. We need not follow Mr. Mitford in his enumeration of the species, but refer the reader to Mr. Bean's classification of hardy Bamboos, given in our volume for 1894 (March), where the species cultivated at Kew and elsewhere are enumerated and described, with illustrative cuts, some of which we now reproduce as opportune to the occasion. Arundinaria nitida, fig. 33, one of the loveliest and hardiest, to quote Mr. Mitford, was formerly called A. khasyana, under the erroneous impression that it was a native of the Khasya mountains, a hot steamy region not likely to afford many plants hardy enough to withstand our climate The species, it appears, is really a native of the Chinese province of Szchuen, a very different climatal region.

This instance, among many more, shows the great advantage that accrues from the association of Botanical research and practical cultivation. The culture of those plants, as in the case of Orchids, will lead to an immense advance in our knowledge of the plants, and to the gradual establishment of a correct nomenclature, and at the same time the information gleaned as to the native countries of the plants will afford most useful hints to the cultivator.

Incidentally, we may mention a curious co-relation alluded to, with becoming caution, by Mr. Mitford, and that is the circumstance that all, or almost all, the species known to be hardy have the smaller veins in the leaves arranged in small but conspicuous squares, the venation being, as it is called, tessellate. Mr. Mitford's paper was instructive and suggestive to a high degree, but as it will doubtless be printed in full in the *Journal* of the Society, we need now only counsel those of our readers interested in the subject to look forward to a future issue of the *Journal*. In the meanwhile we may refer them to Mr. Bean's *Monograph* already alluded to, and to Mr. Mitford's own communications to the *Garden*, and to our own columns.

At the conclusion of the lecture, some remarks were made by the chairman, Sir Alexander Arbuthnot, and by Sir John Llewelyn. Dr. Masters mentioned that A. japonica, better known as B. Metake, Hort., thrives well in one of the densest and most insalubrious London suburbs, and even under the shade of some old Lime trees, where little or nothing can be induced to grow.—*Gardeners' Chronicle.*

FOREST CONSERVANCY:
CONSERVATOR'S REPORT FOR 1894.
SHOULD THE FOREST DEPARTMENT BE ABOLISHED AND KACHCHERI OFFICIALS BE MADE FORESTERS AS WELL AS POLICEMEN?

The Forest Department is understood to be standing on its defence. "Retrenchment" as a cry has rung through the island. Radical reform and retrenchment based on the sweeping-away of the immemorial Paddy Rents, and the absolute promise of Government, had been the idea in the public mind, as involving a corresponding cutting-down and re-organisation of the Revenue service. But very cleverly has our Executive got a Commission to spread out its Inquiry over the whole body of Establishments and to furnish such a Report as may afford an excuse for ignoring the original purpose in view and for indulging in the very minimum of alteration. Some people indeed, think that the whole affair will end in the Colonial Secretary doubling up a couple of Magistracies here—the Judicial rather than the Revenue Service suffering!—and cutting off an unfortunate Survey officer or peon elsewhere. We shall see.

But meantime, it has struck more than one would-be critic,—afraid to face the real problem of Retrenchment,—that a safe outlet for zeal in the public interests would be found in some of the outlying Services or Departments which have neither revenue nor judicial justification for their existence. Among these, the Forest Department was especially singled out by a native Unofficial Member of Council, apparently with the sympathy if not encouragement of the Executive; and this has led to the belief that there would be no objection in high circles to imposing Forest, as well as Police, duties on the occupants of the different Kachcheries, in order to justify the continued existence of the latter on their present scale. It is peculiarly unfortunate that, at such a juncture, the Conservator of Forests should have to go on leave and that he should furnish—for the second time—what he himself considers an unfinished and inadequate Report. Such as it is, we give extracts representative of the more interesting, practical portions elsewhere. But we would say that the very first duty of Mr. Broun on his return should be to supply a special Report with "the case" for the Department as a separate entity—summing up what it has done in the past, is doing now, and may be expected further to do in the interest of the Colony. This will enable a proper judgment to be formed, and if after such is weighed in the balance, the Forest Department is found wanting, we should be among the first to cry for abolition or amalgamation. [But let not this side business, divert the public mind from the real object of Retrenchment, based as it was on the Paddy Rents abolition.]

In thinking of the *raison d'etre* of a Forest Department, we are always reminded of the shrewd Scottish Laird's injunction to his son and heir:—"Keep stickin' in a tree, Jock, it will aye be growin' when ye're sleepin'." It may be said why should Assistant Agents not see to this. Why not indeed? But unfortunately, where is the district revenue officer who has given himself the trouble even to establish a model Kachcheri garden with products familiar to the people in order to show what proper cultivation means, and the results? If Forestry and arboreal plantations are to be attempted at all, it is quite clear that they must have skilled direction and supervision. The work must be well done, or it had far better be left alone altogether. We do not know that practical planters speak very highly of some of the efforts of the Department towards establishing plantations in the hill districts, and it is possible, that after these are once started, there would be economy in giving out their upkeep—weeding, supplying, &c.—on contract to the nearest estate superintendent who might be inclined to take up the charge. Experienced supervision would still be required; but a contract, if feasible, should save the moving about, or engaging, of a special force of forest coolies.

We must, however, look more closely at the Report before us, and the first broad fact that comes out is that although there was an increase of income last year—timber and other produce sold—from R361,000 in 1893 to nearly R381,000 in 1894; yet the deficit on the working of the Department which was close on R39,000 for 1893, was no less than R72,000 for last year. The largest portion of this deficit has accrued in the Western and Central provinces; while the Eastern, Northern, North-Western and Uva provinces show a surplus. But it seems the Eastern has done less well with its timber trade than in previous years owing to the re-establishment of the Indian import duties; while the falling-off in the North-Central province is due to the low price obtained for ebony. Then again in the Central, a good deal of timber delivered in December could not be paid for or credited till 1895. Nevertheless, explanation is required, and not afforded, so far as we can see, in justification of the high amount of charges in the Western and some other provinces. It will be necessary to show how far the Colony can count on an adequate return for this comparatively heavy and continuous outlay, in the future. If such return is not assured, most certainly there is need for the shears of economy to be effectually applied. That the Conservator's office should make an increased appropriation in 1894, up to wellnigh 10 per cent of the total outlay, seems also to require examination.

To turn to some of the actual work done, we are told of a total area of reserved forests equal to 52,000 acres with 162,000 acres taken up to be reserved, waiting for final proclamation, and 72,000 acres of fresh areas gazetted for settlement last year. A good deal of work has been in demarcating forest boundaries, in surveys and "working plans," which latter term applies to sample plots with planted trees in which measurements for annual increment are registered—teak in the North-Central province showing one of the best results. We pass over departmental details, with prosecutions and the control of chena cultivation, to draw attention to the Conservator's remarks (reproduced) as to Forest fires. The seed crop appears to have been bad last year, all except of the satinwood tree. We direct attention to the notes on the progress of the different plantations as perhaps the part of Mr. Broun's Report that is of most general interest, especially to our planting readers. We should like to have some criticism of these from neighbouring planters. We do not quote for the Eastern or North-Western provinces, although good work seems to be done in both. In the natural forests, a good deal of creeper and undergrowth cutting as well as the regulation of felling occupy attention. Nothing seems to come amiss to the Forest officer and roads and buildings appear in his list of work, while we are told that the Batticaloa sawmill

is doing well and has more than enough to keep it going, and it saves R200 a month; wire shoots in the Central and Uva provinces are also said to save much labour.

There can be no doubt of the important bearing that a great deal in Mr. Broun's Report has on the development and prosperity of the Colony. Apart from the "Reserved" and "proposed-Reserved" Forests already referred to, the Conservator calculates there are 2,404,490 acres of other Crown Forests in the Colony. Of forest plantations at the end of 1894 there were altogether 1,712 acres; while 22 miles of roads and paths had been made by the Department. The total of trees felled during 1894 of all kinds was 28,609; while between R6,000 and R7,000 of forest produce was granted free of charge for various purposes. Finally, we ought perhaps to notice the fact that against the R72,000 of deficit on the year's working, a "summary of outstandings due to the Department" at the close of last year, gives a total of R62,586.

FOREST SETTLEMENTS.

The following areas were finally proclaimed to be reserved forests during the year:—

N.-W. PROVINCE—Baddegamuwa forest, area 619 acres; Nariagama forest, 615 acres.

SABARAGAMUWA—Yalpana forest, area 55 acres. Grand Total 1,289 acres.

In the case of the last named forest 223 acres were taken up, but the area of forest secured to the Crown was only 55 acres.

It cannot be said that two square miles of reserved forest obtained as the result of forest settlements for a whole year is a brilliant record. It is partly accounted for by the complicated nature of the settlements undertaken in Sabaragamuwa, and partly to the fact that certain areas await completion of boundary surveys by the Survey Department before the final Proclamation is published.

A reference to form 1 in the appendix will show that the total area of reserved forests was 51,361 acres, or 80·25 square miles, on 31st December, whereas it had been reported to be 52,144 acres, or 81·47 square miles, on the 31st December of the preceding year. In paragraph 6 of my last report I pointed out that many of the so-called forest reserves in Sabaragamuwa contain large areas which are useless for forest purposes. The work of expurgation of such areas has been begun, and 1,203 acres, chiefly in Bambarabotuwa, have been excluded from the reserves. If all the areas which should be so excluded were taken out now, I fear that the area of the true forest left as forest reserves would be very considerably diminished.

There are 162,352 acres, or 253·67 square miles, which have been taken up to be reserved, some of which await, and have for some years past been awaiting, final Proclamation; others, inquiry regarding which is now in progress, and others again in regard to which the preliminary notification has appeared in the *Gazette*, but a settlement of which has not gone through the first stage. Of those regarding which the final report of the Settlement Officer has been sent, I have mentioned some in paragraph 6 above others, such as the Barawa and Mettirigalla forests and others, mentioned in paragraph 9 of my last report, have been kept unreserved, as in the opinion of the Government Agent, it was desirable to acquire certain lands and to include them into the reserve.

The fresh areas gazetted for settlement during the year are the following:—

WESTERN PROVINCE.	Acres.	
Fuel reserves	1,969	
CENTRAL PROVINCE.		
Kelani Valley reserve (about) ..	8,000	
NORTH-WESTERN PROVINCE.		
Moragalla forest	52	
SABARAGAMUWA PROVINCE.		
Gilimale (second settlement)	17,760	
Kitulgalla	660	
Eratne	10,173	
Godagampola	377	
Mahawettekanda, &c. ..	2,121	
Yatipana	55	
Udakarandapana ..	206	
Kelani Valley (about) ..	28,155	
Dehipahala	1,558	
Badahelgoda	910	
		61,975
Total ..		71,996

or 112·49 square miles. All this area is not forest proper: over half will most likely turn out to be private land or chena land unsuitable for forest conservancy.

The third portion of form No. 1 in the appendix shows that there are estimated to be another 3,900 square miles of forest, regarding which no settlements have as yet been attempted. The estimate is, on account of the very imperfect surveys in our possession, only a very rough one, but even if the estimate were considerably reduced it would, at the rate at which settlements now progress, take very many years to make settlements for the whole forest area. There are other Provinces besides Sabaragamuwa which are in urgent need of settlement, and I should much like to see a beginning made in the larger forest tracts of the dry zone which produce our most valuable timbers.

WORKING PLANS.

Fellings were carried on in compartment 5 of Conical Hill forest near Nanuoya, stripes Nos. 1, 3, 5, 7, 9, 11, and 13 being cut over. The yield has been greater than that calculated by the Working Plan Officer, 2,836 cubic yards of firewood being obtained, and the estimate being only 1,810 cubic yards. As the estimate has usually been rather under than over the actual yield, this surplus comes as a pleasant surprise. Compartment 5 is one of the richest in the forest, the yield per acre having proved to be 235½ cubic yards per acre.

Four strips cut over in 1893 in compartment No. 1 were planted with *Eucalyptus robusta* and *Acacia decurrens*, and four strips planted in 1893 were supplied during the south-west monsoon.

Sufficient experience has now, I think, been gained by our staff to try and work the forest on a more natural system. The cost of replanting after clearing absorbs a large portion of the revenue obtained, especially as the young plants suffer much from the inroads of animals, and I have instructed the Forester to limit his future fellings in the strips to the taking out of suppressed trees and trees on the decline. This will have more than one advantage, for it will be possible to come back much earlier to the adjoining strips which have now to be left untouched until the growth on the cleared strips has attained sufficient strength to resist exposure. The cost of planting will be almost entirely done away with, and the character of the forest will remain unchanged. Near a health resort like Nuwara Eliya it is a pity to see the forest of indigenous trees give place to the more monotonous Australian trees.

Mr. Hansard was engaged until October in making rough surveys of the Crown lands in the Jaffna district bearing palmirah, and of lands suitable for planting. He has submitted a report containing his proposals for future operations, but it has not yet been submitted to Government owing to my having referred it back for some further data. His inquiries on the spot show that many areas are claimed on apparently very poor titles, and that at the rate at which palmirah is now being exported to India there will soon be none left. The only way to make up for the improvidence of the people is for Government to make extensive plantations, which will not only provide fruit after 15 or 20 years, but which after 80 years will supply timber.

In the month of August, Mr. Ferguson was placed on special duty in order to prepare a working plan for the Haputale reserved forest. This forest has been much overworked by the Railway Extension Department, and it is necessary that strict rules be framed in order to ensure that none but badly grown and suppressed trees be removed until the forest shall have recovered from the effects of the heavy fellings made in the last few years.

North-Western Province.—Two sample plots have been started in the Puttalam District: one for na (*Messua ferrea*) in the Galkuli forest, and one chiefly for satin at 3½ miles up the Kenankali road.

FOREST FIRES.

The Assistant Conservator, Eastern Province, followed the instructions I gave him in order to preserve the grass-surrounded teak plantations. I am glad to say that the result has been a total absence from fires during the year. I hope tha this success will be continued, and that the plant ations will benefit from the protection afforded.

The firing of patana and grassy plains to produce a fresh crop of herbage still goes on unchecked. Where the plains are surrounded by forest these are gradually giving way before the yearly fires. In the hills patana fires kill down seedlings and impoverish the soil. I should recommend that the patanas near the railway line be strictly protected. as the action of fire on the top soil encourages slips and fall of boulders when the rains begin. Apart from this, I think a little protection would have very beneficial results in improving the soil, and probably also the herbage. It is absolutely impossible for the more tender herbs to withstand the action of fires, and the ground is invaded by coarse mana and illuk grass, whose underground stems enable them to survive the fibre.

PLANTATIONS.

Western Province.—The plantations at Mirigama were cleared of undergrowth and creepers at a cost of R278·29. It was high time to take up this work, for the trees—especially the lunumidella and jak —were suffering much from the undergrowth and creepers. Domba, which a few years ago looked the least promising of all, is the species which has stood best. It is doing well, and the ground is already covered with self-sown seedlings.

Central Province.—Thirty-eight acres were added to the existing plantations viz., at Galboda 9 acres, at Kotagala 5 acres, and at Conical Hill 24 acres, bringing the total area of plantations in this Province to 529 acres.

The 9 acres at Galboda were added to the Blackwater clearing, and consisted of scrub and patana land. The plants put in were *Eucalyptus robusta*, grevillea, a few domba, and pepiliya (*Aporosa latifolia*). This piece is doing well, and hardly a vacancy is to be seen. The cost of this addition was R350, or less than R40 per acre. As a whole the Blackwater field is by far the worst of all the Galboda clearings. The soil in some portions is so poor that although there are few vacancies the plants will take a long time to make a start. I was glad, however, to note that tho plants of *Acacia decurrens*, which were put in as supplies, have taken a sudden start, and that the portions planted with *Eucalyptus robusta* are doing well. In cool places, where domba and pepiliya had been put in, they are doing well. I do not think, however, that much can be expected from the portions planted with *Acacia melanoxylon*. Grevillea is doing better, and may make a start in another year or so. The total expenditure on this field for the year was R723·31. Dekinda No. 1 field is now doing well. It is planted with *Eucalyptus robusta* and grevillea, and the supplies put in were chiefly of indigenous species, such as domba, pepiliya, del, etambe, &c.

Dekinda No. 2 field is the best of the whole plantation. It is covered chiefly with grevillea, which is now forming leaf canopy. The cost of upkeep, chiefly of No. 1 field, amounted for the year to R851·54, 23·566 supplies having been put in.

Mapakande field has always been a source of trouble. However, I am glad to say that the plants are now doing well. Fifty acres were re-planted on this field. About 135,000 plants were put out during the year, consisting of grevillea, take karavu, sapu, wild cinnamon, etamba, pepiliya, domba, milla, wa, pehimbiya, and katuboda. The teak below the cooly lines is doing very well, but some had been put on clayey spurs, and does not show much progress. Most of the *Casuarinas* have been killed out by white ants. The cost for the year was R3,839·55. Penhros fieldis, on the whole, doing fairly well, that is to say, certain portions show good growth, while others make poor progress. The failure in many parts is due entirely to outside circumstances. For instance, some thousands of jak plants which were doing well have been destroyed by hares and pigs. *Casuarina*, which had attained a height of 10 to 15 ft., was killed by white ants as in the other clearings and white grub attached a number of *Eucalyptus robusta*. The supplies now put in will, I hope, do well. Experience now shows that the best supplies are those of indigenous species, such as katuboda (*Cullenia excelsa*), pepiliya (*Aporosa latifolia*), del (*Artocarpus nobilis*), damba (*Eugenia opereulata et eet sp*), suriyamara *Albizzia* (*odoratissima*) liyan (*Homalium zeylanieum*), mihriya (*Diehopsis, sp.*), and other trees growing in the belts of forest close by. I myself made some experiments with some of these species, the seeds of which I dibbled mostly into poor soil, and the results have, I hear, been satisfactory. The total numberof plants put out during the year was 34,029, and the expenditure on this field was R1,163·97.

The total expenditure during the year on Galboda plantations was thus R6,577·97, or R17·44 per acre. Since the beginning the total expenditure has been R39,414·81, or R104·55 per acre. If the revenue obtained from the plantation be deducted, the total expenditure amounts to R35,476·26, or R94·10 per acre.

Five acres were added to the plantation in the Kotagala reserve at a cost of R228·20, thus bringing the total area to 10 acres, which have cost altogether R455, or R45·50 per acre. The Assistant Conservator reports the plantations as doing well. The whole clearing was planted with *Eucalyptus robusta*. Twenty-four acres of strip clearings were added to the Nanu-oya plantations during the year, thus bringing the total to 106 acres. The clearings planted in 1889, 1890, and 1891 are not doing well, as most of the *Eucalyptus globulus* are attacked with canker, Happily in the older plantations a larger number of standards were left. These are now spreading their crowns and filling the vacant spaces. *Eucalyptus robusta* is doing well in the more recent plantations, and seems to be the tree best suited for the plantations, for *Acacia decurrens*, which would otherwise do well, gets eaten down by sambur. The plantations of the year at Conical Hill are doing well, but they also suffer from being browsed by deer. The plantations made near Scrubs estate and near the kachcheri are doing well. On the latter plantation, however, a portion of *Cryptomeria* trees are coming up only very slowly. They are somewhat exposed. The plantations near the nursery on Gallwey's land are doing very well. A wire was taken through the plantation by the Telegraph Department, and some trees hacked about, when it would have been practically quite as easy to have avoided the plantation altogether. On Christie's land the *Eucalyptus robusta* are doing well, but the *Acacia decurrens* have most of them been broken by cattle. The tables given in appendices B, C, and D show the rate of growth in the different plantations of the Central Province.

The total cost up to date for the 529 acres of plantations in this Province has been R49,330·55, or R93·25 per acre, or, after deducting revenue obtained from them, R31,630, or R59·79 per acre.

Province of Uva.

No money was spent on the Judges' Hill plantation, which can now be considered to the established.

At Elladaluwa no money was spent on the 13-acre block planted in 1889. It was found necessary to replant the whole of the 25-acre block planted in 1892, on account of the constant damage done by cattle. Several watchers were appointed in succession, but had to be dismissed on account of

neglect of duty. It appears to me that a few hundred yards of barbed wire would have come cheaper, and would have had better results. As the Assistant Conservator does not state by what means he proposes to protect the young crop he has again put in, I would suggest that even now the purchase of the barbed wire would be advisable. The cost during the year has been R904·39, or R32·88 per acre. The small block called "Mediriya" plantation in form No. 5 is the one mentioned in last year's report as having been planted with the large-leaf mahogany. Teak and toon and mahogany were planted in this area at a cost of R13·49. The mahogany has here also been attacked by borers. The Bandarawela plantations do not show a satisfactory progress.

HAPUTALE PLANTATION.—The 4½ acres planted with *Eucalyptus robusta* in 1889 are a great success, and it is time to thin out the suppressed trees. I have asked Mr. Ferguson, as part of his working plan work, to coppice a few trees, so as to test the capability of the stools to produce stool shoots. The next plantation, although not quite such a failure as anticipated last year, cannot be called a success, and many vacancies had to be supplied. Fifty acres were added to the plantation, but here there are also a number of vacancies, the result, I should say, of too late planting. The Assistant Conservator put them down at 15 per cent, but my estimate is higher. The cost of supplying and planting in this plantation during the year amounted to R2,042·15, or R37·13 per acre. The sale of 3,359 yards of firewood, chiefly remains of the trees taken by the Railway Extension Department, which were cleared out of these 50, brought a revenue of R5,497.

OHIYA PLANTATION.—Twenty acres in two blocks of ten acres of forest, which had been mostly cleared by the Railway Extension Department, were planted during the year at a cost of R1,037·29, or R51·86 per acre. The cost was more than covered by the sale of the firewood brought out of this clearing, by which R1,500 were realized after issue to the Railway Department. The cost of planting is higher here than elsewhere in the Province, but, on the other hand, the clearing can, so far, be considered a success. The Moratota plantation is said to be doing well. The cost of upkeep was R79·94, or R13.32 per acre. This is one of the small plantations which were started without reference to me. During the year 2,775 plants of different species were distributed free of cost to the Public Works Department and to the Local Board. I am not aware that this free grant was sanctioned by Government.

The total expenditure on the 161½ acres of plantation was during the year R4,497·32, or R27·85 per acre, and the total cost since the plantations were started R13,750·65, or R85·14 per acre. As the revenue obtained during previous years is not stated, I cannot show the net expenditure on these plantations. Appendix E shows measurements taken in the plantations.

Province of Sabaragamuwa.

No addition was made to the Para rubber plantations no account of there being no suitable land close by. The blank spaces at Yattipawa were supplied with plants grown from seed produced at Edangoda plantation. These appear quite sound and healthy. The trees which produced the seed were planted in 1891. The plantations look sound and healthy, and are the better for the grass which has been allowed to spring up and protect the soil. Some trees have suffered from inroads of cattle.

The following measurements were taken by the Assistant Conservator:—

Name of Plantation	Year of Plantation	Number of Trees measured	Average Girth in Inches	Mean Annual Girth Increment in Inches
Edangoda	1891	120	12·12	4·04
Do	1892	50	8·75	4·37
Do	1893	20	4·12	4·12
Yattipawa	1892	1·8	9·13	4·56
Do	1892	108	9·37	4·78

The trees measured at Yattipawa were respectively on eastern and western aspects. As will be seen, those growing on western aspects show slightly better growth, and both of them have grown better than those planted in the same year at Edangoda. The jak plantation at Edangoda has unfortunately suffered so much from attacks of cattle, deer, hares, &c., that the Assistant Conservator is of opinion that it does not pay to extend it further. It is a pity, for there is a large extent of land which would be suitable were it not for these enemies of the plants.

The hal plants put out at Edangoda and Yattipawa do not show satisfactory progress. This tree requires partial shelter for young plants. Mendora is doing well, and so is nedun. Both of these species, however, like protection when they are young and tender.

DEPARTMENTAL OPERATIONS.

Telegraph Posts were supplied in different Provinces I have requested all Government Agents to lay in stocks of telegraph posts in order that well-seasoned timber may be given without delay to the Telegraph Department to meet urgent indents.

It would also be satisfactory were the Public Works Department to give trials to a greater number of kinds of timber. For example, in the Eastern Province tumpalai was used for several kinds of works, and I have not heard that it has proved to be a bad timber, yet the Public Works Department now confine their indents to palu, kumbuk, and milla, the latter two of which cannot be said to be very abundant. The price of tumpalai is also lower, and the use of this timber would reduce the cost of public works for which it was used.

The work at the Central depôt was ably superintended by Mr. Gillam. Although the sales of satinwood for export to England were almost entirely confined to flowered satinwood, there being little demand at home for plain logs, the total sales would have exceeded those of 1893 had the last ebony auction only been a success. The average prices for ebony sold were improved, and very satisfactory prices were obtained for satinwood. The total value of sales amounts to R51,286·67.

CITRONELLA OIL.

Few oils are more largely used nowadays in soap-manufacture than oil of citronella. Within the last ten years the exports of citronella oil from Ceylon, now the only country counting for anything in the production of the article, have increased threefold, and there seems hardly any limit to the capacities of its employment in the soap-industry. Formerly a good deal of citronella oil distilled by a European manufacturer used to reach our markets from Singapore; that particular brand, as well as another prepared by a European distiller in Ceylon, was considerably dearer than the "native" distillate, which composed the bulk of the supply, and both are now rarely met with in the open market. The great increase in the production of citronella oil in Ceylon has gone hand in hand with a depreciation of the article, which was arrested only when the last margin of profit had disappeared, and when, in consequence of the energetic action of one or two large buyers, adulteration of the oil with kerosene—long a favourite method of certain distillers and exporters of turning a dishonest penny, while yet keeping pace with competition—had been rendered so easy of detection as to become almost impossible. In 1881, when the export of citronella oil from Ceylon was less than one-seventh of last year's shipments, the price of "fair native brands" in the London market averaged about 3½d per oz. (the year before, during a temporary out-burst of speculation, it touched 6d per oz.), but in January, 1888, the same quality could be bought in London at 7-8d. per oz. The screw of competition could not be turned on any tighter than that figure, and in a trustworthy Ceylon report issued shortly afterwards we were told

that, although the cultivation of lemongrass and citronella plants for distilling purposes had attracted much attention in the western and southern provinces of the island, yet at the price then ruling a European distiller could make no other profit than was obtainable from the sale of the manure made from the grass after distillation. In that year the area under citronella and lemongrass in Ceylon, was estimated at about 10,000 acres, but in 1892, in spite of the unenviable market position of the article, the estimated area under cultivation had increased to about 25,000 acres, and it was then believed that over 450 native stills were employed in the industry. The subjoined figures, indicating the exports of citronella and lemongrass oils in ounces (an old-fashioned way of quoting the article which ought to have been abolished long ago) during the last fourteen years afford an indication of the enormous development of this industry:—

1881	1882	1883	1884	1885
1,950,501	2,940,016	3,916,398	4,997,333	6,570,132
1886	1887	1888	1889	1890
6,745,794	8,828,578	10,559,465	10,263,433	14,550,075
1891	1892	1893	1894	
15,263,581	13,512,626	10,696,481	15,015,532	

The statistics here given refer to citronella and lemongrass oils together, no separate records being kept of the two, but as the use of lemongrass oil is insignificant compared with that of citronella the first-named oil may be left out of account for practical purposes.

Until last autumn the price of citronella oil showed little or no improvement, but a moderate advance then began to take place, and within the last two months there has been a further important rise, the quotation of "fair native oil" in drums having advanced from 9½d per lb., c.i.f. terms, last March, to 1s 3d. per lb., c.i.f., terms, at the present moment. This unusual rise is partly due to speculation. Citronella oil has long been a favourite article of speculation with a few Mincing Lane houses, and this spring two or three of these firms appear to have sold oil on contract for future delivery without ascertaining whether there would be any difficulty in obtaining the material in the country of production. When the time came for covering their sales it was found that citronella oil had suddenly become scarce in Ceylon. It is said that the drought of last season had destroyed part of the crop, and as both citronella and lemongrass require a great deal of moisture, though they grow in poor soil, that statement may be true, but as the grass is cut and distilled twice a year a prolonged scarcity is not probable. Anyhow, the speculators were caught. They succeeded in purchasing a portion of the required supplies in America, where the use of citronella oil, formerly very large (in 1892 the States imported nearly 6 millions of ounces, in 1893 only 2½ millions), has greatly declined in the last two years; but when the Americans realised the real position of affairs they became buyers themselves, and with this fresh demand the Ceylon shippers have been able to run up their quotations still further. The first shipments of the summer distillation are due in London in August, and in all probability prices will again recede then, although a selling-price of less than 1d. per oz. seems to be an abnormally low one for the article. It is said that the consumption of citronella oil has increased enormously since last year, when the manufacturers of a much advertised soap began to use it largely.—*Chemist and Druggist.*

THE U. P. A. S. I.

THE SECOND GENERAL MEETING of the United Planters' Association of Southern India assembles at Bangalore on Monday (19th inst.) The most important question that will have to be dealt with concerns the Labour Laws. The draft Bill for the Compulsory Registration of Maistries is another important question, which will occupy the atteution of the delegates for several hours. Freights is, we see, put down for discussion. If the United Association could deviso a scheme which would enable planters to ship their crops home at the cheaper freight than heretoforo, nothing could be better; but for the Association to try and squeeze the merchants who take on themselves the risk which the chartering of special steamers necessarily entails, is a petty and unworthy action. The Ceylon import duty on Indian teas is to come forward, and we anticipated that some action will be decided on which in every probability will meet with the approval of the authorities in Ceylon and permit the removal of the present inequitable impost in course of time.—*M. Mail.*

SELANGOR PLANTERS' ASSOCIATION AND THE LABOUR QUESTION.

Minutes of a general meeting held at the Selangor Club on Saturday, 27th July, 1895. Present:—Mr. E. V. Carey (Chairman), Mr. Tom Gibson (Hon. Secretary), Messrs. C. Meikle and E. B. Skinner (Committee Members), and Messrs. Hurth, C. G. Glassford, R. C. Meikle, B. Nissen and A. C. Rendle.

Messrs. H. C. Rendle, H. M. Darby and J. Tait were elected members of the Association.

Proposed by Mr. Carey, seconded by Mr. Gibson. "That the Hon. Secretary be requested to ascertain from the Government whether the following rules—

(*a*) All recruiters arriving in India with a letter from the Indian Immigration Agent, and those appointed by the agents of the Planters there, shall take out licenses in India;

(*b*) No agent or recruiter shall receive any commission on coolies not entered in the list of Indentured coolies (Form A)—in Circular dated Penang, 8th November, 1887, and distributed amongst the Planters of the Straits Settlements and Native States, are still in force; and if so that the hardship of Planters not being able to recruit free coolies in India through paid commission agents, be brought to the notice of the Government; and that the Government be asked to make exception in the case of mercantile firms of standing and other recruiting agents of accepted respectability."

Mr. Carey read a report of his visit to Southern India, fully and clearly explaining the necessity of the above resolution, which on being put to the meeting was carried unanimously.

Resolved that the Hon. Secretary take steps to have the report printed and distributed to members of the Association.

—*S. F. Press.*

PLANTING AND PRODUCE.

CATCHING THE PROMOTER'S EYE.—The meetings of tea companies, which fell so thickly a few weeks since, are now nearly over. The present year is marked with a red letter in the history of Indian and Ceylon tea enterprise, and although the tide of success is high we will trust that it is still rising, and has yet to touch high-water mark. After allowing for favourable conditions in the form of low exchange and other advantages, there is a great deal to be said for the energy and adaptability of the planters on the spot and the representatives of the industry at home, who have placed the tea industry on such a satisfactory footing. The exercise of prudence as regards increased cultivation and perseverance about the question of new markets are points which have now to be steadily borne in mind. The success from a financial point of view of the leading Companies has caused the profes-

sional companymonger to look with greedy glances in the direction of tea gardens. We have heard of more than one instance of professional promoters in search of "properties" to turn to account. Fortunately the public are not likely to be caught in the toils of these gentry. The well informed amongst investors have become acquainted with most of the men of "light and leading" in tea, and are not likely to dance to the piping of mere outsiders. But no doubt we shall see some attempts made to float speculative tea projects on the strength of the past season's results, but unless the said projects are sponsored by the right people there is not much chance of their finding favour. The investor is not the wisest of mortals, but he is a little more shy than he once was of the wrong sort of joint stock company. All true friends of the tea industry, however, will fervently hope that the company jobber will continue to busy himself in other directions and leave tea severely alone.

The Blackman Dryer in Darjeeling.—The first consignment of new season's Darjeeling tea ex Castleton, fired by the Blackman Drier, was sold at the Commercial Sale Rooms, Mincing Lane, on Monday last, by Messrs. Lloyd and Carter. The following prices were realised—viz., 27 half-chests orange Pekoe, 2s; 33 chests Pekoe, 1s 6½d.—*H. and C. Mail*, Aug. 2.

SALE OF CINNAMON AND COCONUT PROPERTY.

Mr. A. Y. Daniel, Auctioneer, put up for sale by Pulbic Auction, at his rooms, today, (Aug. 21st) the lease for 7 years of the cinnamon and coconut property knows as Cayton estate, situate in Talangama and comprising about 208 acres. Mr. C. D. Alwis opened the bidding with R500, and the lot was bought in at the last bid made by Mr. H. O. Abilem, of R2,000. The bidding was brisk at the beginning, but latterly was somewhat slack.

MANANGODA GOLDEN TIPS.

At today's (Aug. 21st) tea sale 1 box of Manangoda Golden Tips weighing 3 lb. was put up by Mr. Seale of Messrs. Somerville & Co. The bidding rose from R2 to R7·50 per lb. and the lot was knocked down to Mr. J. H. Love, the new Broker.

CAMPHOR TREES IN CEYLON.

An upcountry planter writes:—"I told you I would try and send you some information about camphor growing in Ceylon, but I can't. I got some seed here last year and as it grew very slowly (4,600 feet) I thought it would be better to try it elsewhere, so I sent some plants to a few friends in Haputale and some to near Gampola and told them their value. The Haputale trees are doing well, but I can't get any reply from Gampola. Here they grow decidedly slowly, but they are growing."

THE U. PLANTERS' ASSOCIATION OF S. I.

Bangalore, Aug. 19.—The second Annual Meeting of the U. P. A. S. I. commenced its sittings at 11 a.m. today, 17 members being present. Mr. Digby T. Brett, the outgoing Chairman, delivered an address. He agreed with the action of the Government of Madras in abandoning the Estates Labour Bill and commended the sympathetic action of the same Government with regard to the Coffee Stealing Act, with reference to which, he said, an opportunity would be afforded of waiting in deputation on the Viceroy during his tour in Southern India. Mr. Sprott Coorg was elected Chairman, Mr. Hockin (Wynaad) Vice-Chairman and Mr. Yonge, Secretary.

The first business dealt with was Act XIII of 1859 and the Estates Labour Bill. The Hon. Mr. Romilly moved that an address should be drawn up and presented by a deputation to the Viceroy on his tour in Southern India. The resolution was carried and a deputation was appointed to draw up the draft of an address. Mr. Parsons (Coorg) proposed that the Planting Member of the Government of India's Legislative Council should be advised to bring in an amendment of Act XIII of 1859, unless the Viceroy suggested another alternative, such as a Committee of Enquiry into the working of the Act in Southern India.

It was next proposed that the deputation should suggest the necessity of a Committee of Enquiry being appointed to enquire into the working of Act in Southern India. The Hon. Mr. Romilly proposed that the Viceroy should be addressed on the matter of the Coffee Stealing act, and, if necessary, an appeal should be made from him to the Secretary of State.

The resolution ran as follows:—"That the Sub-Committee already appointed to draw up an Address to the Viceroy includes in the Address an appeal for the Amendment of Section 9, Act VIII of 1878." Carried unanimously.

It was then proposed that, failing a favourable reply from the Viceroy, the deputation should inform the executive of the U.P.A.S.I. and take steps to wait on the Secretary of State.

CAMPHOR AND INDIA RUBBER.

A large numb r of camphor and India rubber trees have been planted at Jhansi as an experimental measure. The site selected, however, does not appear to be well chosen, owing to the absence of any deep wells in the locality.—*Madras Standard.*

HAWAIIAN COFFEE CROP.

The coffee crop this year will be much larger than that of last season. There is also a larger acreage bearing and the blight is not as bad as currently reported. There is very little coffee in the local market at present. Occasionally a few bags come in on local steamers which are readily bought up. Green coffee sold last week at 21 cents. —*Hawaiian Commercial Journal*, July 9.

The Travancore Cardamom Monopoly.—The news that the Travancore Government has at last decided to abolish the cardamom monopoly against which the planting community has been agitating for years past is still going the round of the Indian press. As a matter of fact the Travancore Government although they did contemplate the abolition of the cardamom monopoly have been strongly advised against giving effect to their intention, as it would be practically impossible to assess each holding correctly. It would therefore be the source of regular loss to the Government, and this we learn has been satisfactorily explained to His Highness the Maharajah. The cardamom gardens were all surveyed last year and a regular assessment will be fixed on each holding, which it is expected will amount to the average income obtained by the Government from this source.—*Western Star.*

CACAO IN ITS NATIVE CLIME.

We are much interested in receiving a letter from Mr. Robt. Cross whose name was so closely associated with the early transfer of cinchona seed and plants from South America to Southern Asia. We had lost sight of Mr. Cross for some years and feared he had passed away like some others of the pioneers whose names are embalmed in the early volumes of this Journal, and which were "familiar as household words" among our planters twenty years ago.* Mr. Cross now comes forward to give us some of his South American experience of cacao, and we direct the careful attention of our planters to what he says on the subject. He makes a mistake in supposing there is much coast land in Ceylon or indeed in India suitable for planting cacao. Our coast lands are as a rule poor in soil, and nothing is so suitable or profitable to grow in them as coconuts, while cinnamon and paddy (rice) claim their own peculiar divisions. In other parts in the face of the South-west monsoon, tea flourishes, the crop being one of leafage; but to produce good crops of the rich cacao pods requires a soil that, unfortunately, is not readily found in Ceylon. Certain of our valleys in our hill districts have proved best for plantations, while there are also some good estates 40 miles inland at the foot of the hills. So much we may mention for Mr. Cross's information. What he says about the value of cacao beans or chocolate to travellers, or to an army in the field, in South America we have heard also related of both coca leaves (*Erythroxylon coca*), and kola nuts, as also to some extent of maté or Paraguayan tea. In certain respects, Mr. Cross's information comes to supplement that afforded by Mr. Sinclair in his book on "Tropical Lands" descriptive of what he saw in Peru, Trinidad, &c.

We would ask Mr. Cross to suggest how seeds or plants of the "large, robust and prolific sort" of cacao he describes, can be got for Ceylon planters. The kinds planted in Ceylon have been generally classed by Dr. Trimen as *Forastero* (the pale-fruited cacao) and the fine Red Caracas which was the first variety that came to the island and fortunately proved one of the best that could have been introduced. Later on Dr. Trimen mentioned that the *Forastero* trees were proving, in the experience of our planters, to be the hardier of the two and were giving better crops, than the finer and more delicate variety. We question if we have soil rich enough in Ceylon to carry the large and more prolific sort referred to by Mr. Cross, although an experiment with it would be extremely interesting.

BRITISH CENTRAL AFRICA.

(From the *British Central Africa Gazette*, Zomba, June 15, 1895.)

Mr. Grieve Macrone, Civil Engineer, arrived at Zomba on the 3rd of June to obtain permission from H. M. Commissioner to commence surveys for various lines of railway in the Shire Province. Permission was granted and Mr. Macrone left Zomba on the 5th of June to commence his surveys, which he hopes to complete before the commencement of the wet season.

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* I considered it necessary that a practical gardener should assist Dr. Spruce in the forests, and establish the plants in the Wardian cases at Guayaquil, as well as accompany them on the voyage to India. For this work I selected a very able and painstaking Scotch gardener named Robert Cross, who was recommended to me by Sir William Hooker. He went out from England, and joined Dr. Spruce in Ecuador.—*Clements Markham in 1859.*

NOTES ON MLANJE DISTRICT.

(From Mr. Gilbert Stevenson's Yearly Report)

PROGRESS MADE IN DISTRICT IN 1894.

COFFEE.—Coffee continues to do fairly well, though its success up to date has not quite realized the expectations of the first settlers in the district. This is perhaps but natural. The enthusiasm that was first awakened on viewing the rich and fertile lands, which lie round the great Mlanje range of hills, has had time to cool; obstacles, which of course exist in every business venture, have had time and opportunity to make themselves apparent; but though experience has shown us that coffee planting is not altogether plain-sailing, yet it can truly be said that the coffee industry in the Mlanje district is a very promising one. Five plantations in all have been started: the oldest is 4 years old. An enthusiastic early settler in this district has termed Mlanje, "The home of coffee." A misapprehension has consequently grown up on this point. Wild coffee does not grow, as far as I am aware, anywhere in British Central Africa; nor prior to the advent of Europeans had natives cultivated coffee.

A TRIP TO MEXICO.

(FROM A CORRESPONDENT.)

After leaving Texas and entering Mexico from the north one is struck by the change in the conformation of the land. Texas is a low-lying flat country in the south, whilst Mexico is a succession of lofty rugged mountainous heights and fertile plains and valleys of a picturesque and interesting character. The boast of the Mexican is the climate, and well may he boast. It is as near perfection as possible. As I write this the thermometer stands at 72deg. in the shade at midday. In the sun it is always hot at midday, but wherever there is shadow there a cool refreshing air may also be found. There are no fire-places in any living rooms in Mexico, the temperature being almost equal winter and summer. Snow is unknown except on the highest mountains in winter time. The Americans are not slow to avail themselves of this salubrious climate, and a continual stream is constantly coming in from the States all the year round, in the summer to avoid the oppressive heat, and in the winter to escape the intense cold. Mexico City, which has a population of 400,000, is built on a plain which is some 7,000ft. above sea level, surrounded by mountains, two volcanic, rising some hundreds of feet; whichever way you may look out of the city mountains are seen forming a very picturesque background.

The tram service of the city is sufficient and maintained. The streets are well lighted with electric light. The railway service in the Republic is almost entirely under the direction of Americans, and as a rule comfortable travelling is to be obtained. Pullman cars are attached to all long journey trains. The lines in operation in the Republic up to September 16, 1893, reached an aggregate of 11,109 kilometres, earning about $30,000,000 annually. The mileage and earnings are still on the increase. Tropical fruits are abundant and in great variety. Sugar, coffee, cocoa, and indiarubber grow luxuriantly. The country is very rich in mineral wealth, the principal metals being iron, copper, gold and silver, most of the mines working paying good dividends. Opals are found in quantities not far from Mexico City. Negotiations are pending with the Government for the construction of harbour and other works at the two termini of the Tehuantepec Railway, and when these works are completed there will be a regular service of mail boats from England, having

their ultimate destination in Australia, New Zealand, China, Japan, &c. By this route the distance to these countries will be considerably shortened. With labour cheap, good, and plentiful, a climate that will produce sugar, india-rubber, coffee, &c., in abundance with only rudimentary farming, many square miles of valuable mines still undeveloped, under a Government founded on the firmest basis of equity and justice, and upholding in the strictest sense the rights of property, a better field for British enterprise does not exist, and deserves the immediate attention of financiers. There are several points of interest in the country that would well repay a visit, and a more pleasant, instructive, and healthy holiday could not well be imagined than a trip to Mexico.—*Morning Post.*

HOW IT STRIKES AN "OLD COLONIST." —NO. II.

"Up the steep hill-side, where the labouring train
Marks the wide track that scores the level plain;"

PERADENIYA

has made marked progress during the past two years, notwithstanding the dry seasons. The cover is now closer even on the hill-side, while I never saw a race-course turned to such good account. The tea and Liberian coffee I saw being planted there in 1893 have thriven amazingly. Altogether this famous totum now comes in a good second to Mariawatte.

From the junction onwards to

GAMPOLA

there is not much worthy of note—the old paddy field which probably for thousand of years has been ploughed and harvested still gives a fair return. Tea is cultivated in a desultory way, the Sinhalese evidently preferring to plant on the bare ridges as being easier weeded.

Wherever there is a coffee bush it looks healthy, with decidedly less leaf blight than existed two years ago. About half way to Gampola is said to be the site of the "good white man's garden," Robt. Knox having lived there for some years —probably on the banks of the rivulet called Geeleeoya.

Gampola itself shows but little sign of advancement; its chief product seems to be muck for the two adjoining estates, which are of more intrinsic value than all this ancient township.

SINAPITTIYA

is even a greater marvel than Mariawatte. Washed by a hundred monsoons during the time it was in coffee, one would have supposed there was little left to sustain the tea plant, but there it is worth £100 per acre!

Mariawatte itself leaves little room for improvement. I note that the little hill behind the bungalow with its nondescript soil, has now got pretty well covered but even tea draws the line at certain portions of the next estate. "A poor subject" as honest Willie Leggat said of it years ago.

Further up towards

NAWALAPITIYA

and for a little beyond, there are some very good and well cultivated fields. *Hyndford*, auld Fyffe will be interested to hear, is, though "gey" backward in patches, by no means amongst the hindmost of tea estates. *Gallebodde* has more substance, and is doubtless doing well, but somehow it always strikes me as a dreary, inhospitable sort of place, which I am glad to get past. I almost forgot to mention the forester's experimental plantation at Blackwater, which, however, does not strike me as likely to be a credit to the department. I do not think if the whole Central Province had been searched, more unsuitable soil could have been found in which to grow such trees as teak—or a worse locality for the various natives of Australia which so clearly love a dry climate. The finest eucalypti in the world grow where the rainfall does not exceed 25 inches per annum, so that the idea of selecting the worst end of Ambagamuwa is so outrageously absurd that the man ought to be strangled in red tape who suggested such a thing.

Carolina shows the hand of a thoroughly practical planter.

Poor wet *Watawala* was always a straggling cold bedraggled place. *Rozel*, too, is somewhat mixed; but there are some beautiful fields of tea on the opposite side of the river, though farther up the same side we got a little mangy again with a tendency to overpluck the goose.

Before reaching

HATTON

we pass through part of one model totum—as well it might be, for the jungle cost over £20 sterling per acre, and here lie buried the savings of more than one poor doray! Albeit the place is a credit to the man who did the practical work of lining and planting the tea.

Hatton itself, the scene of the poor old Squatter's labours—and lying on the dividing ridge—never was, and never can be a very pleasant climate to live in, though tolerable for a time to the *Kadai Karen* who battens on his 125 per cent profits. The township is characteristic of Ceylon and looks as if the crows had dropped it. In this respect we might learn a little from our friends in Australia or even the Spanish Colonist in the West who invariably lay out their villages with some method, the humblest hamlet having its "Plaza." Here we have a hideous jumble of sheds, overlooked by a somewhat garish looking hotel.

In

UPCOUNTRY

life generally, I find of course considerable changes during the last 20 years. Some for the better, some for the worse. There are better facilities for moving about, more amusements, more gaieties, but fewer substantial comforts. The food and ordinary home comforts of the average Superintendent have unquestionably deteriorated; partly perhaps his own fault, but chiefly is he the victim of circumstances. The beef for instance, never very good has now degenerated till often quite unfit for human food, and in this matter there seems a lamentable lack of enterprise in Colombo in not arranging for the import of good Australian meat. The other day I saw scores of splendid carcases being landed at Port Said from an Orient Liner. If Egypt can, why not Ceylon? Mauritius also, and I believe Hongkong get regular supplies from Sydney—while here we are still chewing the old cart bullock

But beef is but one thing, there are many other little items which used to be considered necessary to life—now apparently out of date. In olden days every doray had his dozen or half dozen kye and the first thing one heard in the morning was the thumping of a bottle upon a cushion, the nett out-come of which was a pretty pat of fresh butter on the early breakfast table. Nor were these luxuries for the doray alone. Poor parturient Carpie whose own fount had failed to feed the sharger baby, called daily for a supply of milk, while Caruppen himself recovering from gastric fever was never sent empty away. Now alas; the tables are turned,

and it is the Kangani who has the cow: but such a cow! Recently a doray tired of the tinned article resolved to treat himself to a little real milk and sent his kitchen coolie for a supply from the lines. Would the fat shareholder as he reclines in his armchair, like to see the dairy arrangements on his estate? Let him follow me in imagination, down the rugged path to yonder lines and along the not over sweet-smelling verandah, in the farther end of which stands a poor corrugated little cow, suffering somewhat from diarrhoea, but this is her normal condition; beside her stands the attenuated ghost of a calf, weak and trembling from sheer starvation. But here comes the milkman, see him as he crosses the stream which runs past the sick coolie line, hastily washing out the old meat tin, leaving a little in the bottom with which to begin operations. Need I describe the tugging at the poor tortured creature; the supply was indeed meagre, but the mixture was sufficient to do its deadly work at the bungalow. Will any man marvel to hear that this doray got typhoid and shall we longer wonder that labour is getting scarce?

A CEYLON PLANTER IN CALIFORNIA.

San Francisco, California, U. S. A. July 10th 1895.

I have been to see several

TEA PEOPLE

lately, and the demand for "Ceylon" keeps increasing I am glad to say.

I met Mr. Leechman, a brother of the worthy Colombo merchants, he is a broker with good connection: Mr. Dent, an old Ceylon and China man, is now the Tea man of Messrs. Levy & Co., a very wealthy and large wholesale Grocery house; they are doing well and are pushing "Ceylon" in this market. A new man has come here, a Mr. Coppin, well-known on the London market; he intends to work up the Indian and Ceylon teas here, he does not do anything with Chinas or Japans. M. J. Brandenstein & Co., the largest handlers of teas on this Coast, tell me the demand for your teas is increasing slowly; I do not think *they* are *pushing* our teas, however, and I must talk to them and try and convince them of the error of their ways!

Mr. R. V. Webster is due in New York today having been to Canada, Chicago, &c, since he left here four weeks ago: He has done very well so far, this trip.

LIBERIAN COFFEE PLANTING IN SERDANG—SUMATRA.—NO. X.

The nervous man of Kandy raises two very interesting questions: (1) is Liberian coffee improving with acclimatisation? and (2) does it not bear earlier than it used to?

The first question is a very wide one. In this district I know three clearings all the same age: the conditions are very similar; and the seed is all from the same source. Two of the clearings are very fine, growing broad pyramid or cone-shaped bushes, all throwing out their primaries close to the ground, having a sturdy compact look, with only a run-away here and there. The other clearing, planted under exactly the same conditions and from the same seed—from the same nurseries, in fact, as one of its neighbours—is almost entirely composed of run-aways; great long-legged spindly things, six or seven feet in height, and no sign of a primary. Succulent green wood all the way, no sign of its ripening; and the more you cut it the more it runs away again. The only thing to do with such a beast is to cut it out and supply it; or to let it grow at its own sweet will, for there is nothing on it to handle; and it refuses to answer to the knife. The question is, how do you account for it? There are of course always some run-aways; but for three quarters of a clearing to grow in this provoking way—"Oh, now, this is fair redek'lous!"

THE AGE OF BEARING

is an easier question to tackle; for we can fall back on "chiels that winna' ding." For instance Mr. Hill in his figures which he has given to the public, shows us that on Linsum estate in 1884, 28 acres under four years, and 12 acres under three years, together gave 99 cwts. on S'lian Estate, also in Sungei Ujong gave 92 cwts. from 8 acres under four years, and 28 under three in 1885. Weld's Hill in Selangor 1886 produced 325 cwts. from 19 acres under four, and 36 acres over four years old: while Batu Caves in Selangor in 1888 gave 78 cwts. from 11¼ acres under four years old.

In Serdang I have just seen a sample sent to Europe from trees not yet two years old: and the same trees I estimate will have produced more than a picul per acre (133⅓ lb.) before they are three years. Regarding these trees the following blossoming figures may be of interest. The first blossom appeared in June 1894 when the bushes were between 10 and 11 months old. From this was taken the sample I have just mentioned. There was again a blossom at Christmas: but the first large blossom opened on 23rd February 1895. This was a very fine one; and was followed by others, all useful, and some distinctly good ones, on 23rd March, 24th and 25th May, 2nd and 12th June, and 3rd July.

Now if our nervous friend will give us the dates of blossoming and bearing in Ceylon in the seventies, the eighties and the nineties, the comparison will be most interesting. I am sure H. W. will be only too glad to give us his B. N. B. figures as well.

Perhaps few people know how much bucketing about a Liberian tree can stand. There is an instance of it here. Last Yule Tide a two year old tree was dug up, put into a tub and used as a Christmas tree, "After the opera was over" the tub was removed into the garden where it stood neglected for some months, when it was noticed that the coffee tree was throwing out suckers. It was promptly sawn down, and transplanted, with the earth round the roots, to fill up a vacancy, and is now coming on well, with three healthy suckers already throwing out primaries.

I should like to know if, by practical men, it is considered good to allow the first blossom to fruit, or whether it should be stripped "to allow the bush to strengthen." I saw some double distilled dunderhead writting to the latter effect in a Bangkok paper recently. Beneficent nature does not like her gifts thrown back in her face; and if she gives you a good blossom and you strip it, you may bet your last pair of boots that next season will be a bad one. The old dame will have it out of you one way or another. Who does not remember the prudent man who was not going to shave his cinchona until a certain age? What did canker do for him? And where was the market when he came on it? Take what you can get and be thankful.

COFFEE

is going ahead here. In this district another "contract" of 2,000 or 3,000 bouws has just been taken up and will be opened forthwith. But there will be some awful howling grief in the future: and serve 'em jolly well right too! The idea here is for a man who could not tell the difference between K'Koffee K'Kokkonuts and K'Kabbages to open land close by an established coffee estate, and to copy the mode there as well as he can. Unblushingly they try and suck your brains. More land is shortly to be taken up; and, in short, it may be said that coffee is going ahead.

Once before I said that I would like to penetrate

THE BATTAK COUNTRY.

Many thanks, old man, I'd rather take a split—not too much soda. A short time ago I heard something about the Battak Postal Service. Just now a neighbour has had a nearer experience of it: and I find that on this estate the Battak Post has been used more than once: but before my time!

Thanks be! But it may come again. I remember in Hewaheta years ago a planter who used to survey with pride every morning "the best clearing in the district, sir," with its splendid maiden crop. One fine morning the best clearing in the district looked strangely gray in the distance. It had been cut down in the night, the bushes carried into the jungle and stripped. The Battaks cut down trees from another motive. If they have trouble among themselves, or between themselves and a Malay faction they proceed by night to their nearest European, neighbour and cut down a few of his bushes, tobacco or coffee as the case may be, just sufficient to attract attention. On the spot they stick a decorated bamboo into the ground. Their message to you is scratched on the bamboo, and the decorations are symbolical of what you may expect if you take no notice of it: a box of matches; a bow with an arrow tipped with the very inflammable black hair of the sugar palm (arenga saccharifera): or something else tending to show that if you don't settle their little affair they will burn you out. In the case of our neighbour they first cut down 20 two-year old coffee trees; and this not having had the desired effect, they have since cut down 150! What they want is rather difficult to arrive at: but it has something to do with a man who was dead before any of the present lot of Europeans were in this district! The matter of course has been reported to the Battak Controleur. A similar case happened here a few years ago, and the man who cut down the tobacco was caught and got six months' hard. Poor devil!

Perhaps a few words about

LAND TENURE

may not be out of place here. The system seems pretty much the same as that in the Native States across the water. A certain sum down, a lease for 75 years; and an annual quit-rent of one guilder (1s 8d) per bouw (1¾ acres). I must confess that the lease-and-quit-rent system sticks in my throat. I think most Englishmen like to feel that their property is their own. I don't know what price is asked for land now. But one piece I know of, that could have been got for next to nothing two years ago, was spoken of at the rate of six dollars per bouw a few months since: and I doubt if that would fetch it now. The big contracts of 4,000 and 6,000 bouws are of course a drawback to any one who only wants a modest 500 acres of coffee. The Sultan of Serdang realises this and is prepared to give out his land in "lots to suit purchasers": and late comers will have a hard job to find blocks with sufficient water. For though the country is a network of rivers, there are large tracts between the rivers without a drop of water.

THE WORLD'S GREAT FORESTS.

At a recent meeting of the American Association for the Advancement of Science reports were read by several members giving the results of their investigations as to where the greatest forests in the world are situated. The object of these investigations, remarks the *Journal of Horticulture*, was principally to ascertain the exact influence of forests for equalising the climate and the rainfall of the globe. In the provinces of Quebec and Ontario, north of the St. Lawrence river, there is one great continuous tract of forest, which extends northwards to Hudson and Labrador, and which measures altogether about 1,700 miles in length and 1,000 miles in width There is also another large area of timber lands in South America, which occupies the valley of the Amazon, embracing large portions of Northern Brazil and Eastern Peru. This forest is estimated to measure about 2,100 miles in length by 1,300 in width. Recent explorations have shown that Central Africa possesses a tremendous forest. This forest is situated in the valley of the Congo, bounded on the north-east by the waters of the Nile, and by the Zambesi on the south. Its width has not yet been surveyed, but its length is estimated to measure at least 3,000 miles from north to south. Again, there is another in Siberia, ranging from the plain of the Obi River, on the west, to the valley of the Indighinka, on the east, and embracing the great river valleys of the rivers Olenek, Lena, and Jana. The average breadth of this great forest region is 1,700 miles, and the average length from east to west about 3,000 miles. The principal trees in that vast and extensive taigas and urmans are the conifers, comprising pines of several varieties, firs, and larches. The central parts contain thousands of square miles which have never been explored, and to which not even the most experienced trappers have ventured to enter. It is stated that the beautiful semblance of the lofty conifers, which exclude the pale Arctic sunshine, is extremely bewildering to the eye—so bewildering that all sense of direction is lost. Their height averages about 150 feet, and they stand so closely together that walking among them is difficult.—*Australasian.*

A CUBEB MOVEMENT.

August 1st.

Our Amsterdam correspondent writes, under date of July 31st:—We have had a much better market for cubebs the last day or two, and higher prices have been paid. A holder today placed upon the market two parcels of cultivated berries, one of 16 bales (585 kilos), for which he asked 20 cents per half-kilo, another of 196 bales (8,300 kilos), for which he asked 25 cents. Both parcel sold very readily at full ra es.—*Chemist and Druggist.*

PLUMBAGO IN SCOTLAND.

An important discovery of plumbago has been recently made near Newton Stewart, in Wigtonshire. Two beds are said to have been opened up, each about 20 feet wide. This is good news, as it will restore the trades connected with the mineral to the original source for raw material. British supplies are otherwise practically exhausted. Ceylon is at present the chief producer.—*The Investor*, July.

TEA IN NATAL.

The importance to the colony of the rapid and permanent advancement of our local industries can hardly be over-estimated, and that the tea planters have achieved remarkable success was amply demonstrated during the recent exhibition. The tea industry spends thousands of pounds annually in this Colony, and has been established in our midst for a number of years. We may instance the case of Messrs. W. R. Hindson & Co., Limited, of the Clifton Tea Estates, as indicative of what has been, and is being, done by growers. Commencing with an output of some 600 lb. in 1887, their return for present season is upwards of 250,000 lb. Over 500 acres are planted with tea bushes. A huge factory, equipped with the latest machinery, driven by water power, deals with the leaf during the many processes it undergoes on its way from the bush to the tea-chest, and gives employment to about 300 hands. A feature of the exhibit was the free distribution of thousands of neat little packets, containing about 2 oz. of the blended teas which have created such a sensation recently.—*Natal Mercury*, July 26.

LIBERIAN COFFEE IN WYNAAD.

The following is an extract from the Proceedings of a meeting of the Agri-Horticultural Society of Madras held on the 1st ult.:—Read the following letter from Mr. H. B Winterbotham, dated Anda Todi Estate, Vayitri, S. Wynaad, 6th May 1895:—"I am in receipt of your letter of the 4th May and I shall be glad to give you any information whic

may interest you regarding Liberian coffee in which I take great interest. The height of this place above sea is about feet 2,400. The Liberian we find will grow from 500 feet to 3,000 feet. It ripens earlier at the lowest level and takes 14 months from blossom at this elevation to ripen its fruit, but it seems to bear very satisfactorily from 2,000 to 2,500 feet. The small piece from which I am collecting seeds planted 10 × 10 and now 14 years old has averaged over 12 cwt. clean coffee per acre for 8 years past. The trees are now 20 feet high or more, and the fruit has to be picked by small boys with ladders. The first two trees planted by me 20 years ago came from Kew. They are now large trees 33 feet high near my bungalow and from these nearly the whole district has been planted, there being now nearly 4,000 acres under this variety planted during the past 6 or 8 years and most of this will soon be coming into bearing and will I believe replace Arabian coffee almost entirely at low elevations.

Temperature during monsoon is steady at about 68° during winter (November to end of January) it is cold at night 50° sometimes running up to 80° in sun in middle of day. From February to May temperature runs up to 85° in the shade. Liberian coffee does not mind sun but requires a certain amount of moisture with good drainage and does not like heavy wind. Rainfall here is from 110 to 130 inches a year, very little falls from November to end of March. The country is rather steep and hilly. But the Estates near the ghauts get sometimes 200 inches. Those inland as little as 60. On all these places, there is good Liberian to be seen. The sample of coffee of this giant kind is good; something like a date-stone in appearance, has lately been valued at 85 to 90s. in London or say 10s per cwt. less than arabica. I am supplying seedlings to planters in large quantities, these if put into nurseries 6″ × 6″ apart shaded and watered till following June, should be plants 12″ high and ready to go out into the open in pits 20″ × 20″. The plant does not grow very much the first year; after two years it comes on quickly. We find topping the tree or pruning in any way seems to put them back. Any other questions I shall be glad to answer."

Recorded with thanks.

PLANTING AND PRODUCE.

Another Outcry Against Tea Drinking.—The crusade against tea drinking carried on by some medical men deserves the attention of the Tea Association. It is not in the medical journals alone that doctors fulminate against tea. In these journals there is less chance of real mischief arising because they are not seen to any great extent by the unprofessional public. In the current number of the *Windsor Magazine* there is an attack on tea written by Dr. J. E. Cooney, which is very marked in its hostility. After recounting the well-worn stories of adulteration and "facing" of tea, and referring to these Chinese dodges as though the introduction of Indian and Ceylon teas had not put an end to them, so far as tea in this country is concerned, Dr. Cooney expresses the opinion that tea drinking "not only produces, but promotes and prolongs dyspepsia." This we have heard before. "Black tea is bad enough," he says, "but green tea is worse." He does not sufficiently emphasise the fact that scarcely any green tea is now used in this country. Indeed, he has very little that is new to say of tea, nor anything in its favour, except that it is refreshing under certain circumstances, and useful, medicinally, for "the headache of nervousness and exhaustion." He says "the difference between alcoholic drinks and non alcoholic tea infusion is in mansy repects but a question of degree; both are abused, and may be safely abolished and prescribed only as medicaments." If Dr. Cooney had confined himself to calling attention to the mischief arising from excessive tea drinking and improperly infused tea he would have done some real good; but he is less concerned with anything in its favour than with piling up all the old arguments for or against the use of the leaf except under medical direction. The public are to a certain extent hardened against the warning of medical men, who continually cry out against the evils of eating and drinking generally, and say there is danger in almost every article of human food. They are constantly letting us know what we should not eat and drink; but, unfortunately, they do not console us with anything liquid but water, and that, they tell us, should be boiled. Most people are aware that strong tea cannot be sipped all day long with impunity, nor is it conducive to a healthy condition of the stomach when the leaf is stewed and served up at frequent intervals. On the other hand, there is plenty of testimony in favour of the refreshing and invigorating influence of tea consumed under rational conditions. Tea drinkers have many arguments on their side, and it is high time a "counterblast" of some kind were issued in the interests alike of grocer, dealer, and consumer. This abuse of tea by medical men has become monotonous.—*H. and C. Mail.*

SYSTEMATIC FRUIT-GROWING ON A LARGE SCALE:

A NEW INDUSTRY FOR CEYLON:—ORANGES, LEMONS, &c., SUCH AS HAVE NEVER BEEN KNOWN HERE.

Last year we had a very interesting visit from Mr. F. Caley Smith of Messrs. L. Smith & Sons, Yolumba, fruit and wine growers and exporters. He travelled a good deal in Ceylon and right to the North of India, taking notes everywhere as to fruit; but also doing business for his firm. At Nuwara Eliya and Hakgalla, he gave and got information and was much interested in the small private fruit gardens he saw. The S.S. "Himalaya" has brought his brother Mr. Walter Smith on a similar business tour; but he is accompanied by Mr. Pearson, who after being several years in Ceylon, has latterly put in five years at fruit-growing in Mildura, and who is now convinced that given 100 acres of suitable land—sheltered, undulating, not too steep, decent soil,—oranges and lemons such as have never been seen here, can be profitably grown for export in Ceylon. We have recommended both gentlemen to visit Uva, but to take Peradeniya Gardens and Mr. Nock, as well as "Old Colonist" on the way. If our visitors are prepared to introduce the very best descriptions of fruit, and to take all the risk of their experiment, we would certainly recommend, if a suitable lot of Crown land—not exceeding 100 acres—can be found, that it be granted to them on certain conditions, after the fashion of the Pallagama grant?

MATALE: A NEW DEPARTURE.

A PIONEER IN NEW PRODUCTS AND HIS SUCCESSORS.

It is said that Wiharagamma estate, so long the property of Mr. Munton has been leased, with right of purchase, by Mr. E. Gordon Reeves. Mr. Munton has been for a great number of years a proprietor in the Matale district, and well-known as being one of the earliest to experiment in new products when the fate of coffee seemed sealed. So far back as 1878 attention was given to Liberian coffee and cocoa on this estate; and it was one of the estates also that gave scope to the experiments of Mr. Schrotky in the campaign against the leaf disease.

From time to time after the reverses in coffee various enterprises were taken up, and this is one of the very few estates retaining the original Liberian coffee, if indeed there are others,

while cocoa, rubbers of various kinds, nutmegs and experimental hybrids of coffee, maragogipe, and cocoa and a number of other things have been taken in hand. It has been the means of supplying seed from the oldest Albizzia trees in the island, and latterly meeting the demand for lands being opened up in Liberian Coffee, &c.

The lessees are said to be opening the reserve lands in tea, and as tea in the neighbourhood, over the river, opened by Mr. Munton for Mr. Ross is very successful, there is no doubt whatever of the certainty of its success here.

Mr. Munton was associated in the fresh enterprizes of those days with such pioneers, as George Wall, A. G. K. Borron, Alexander Ross and others and has contributed not a little to the district by maintaining its value despite the backwardness of the tea industry in this particular locality.

With the further string to their bow, the new owners will ensure, with the reserve lands in tea, even better ressults than the present.

CINNAMON IN LONDON.

The third Quaterly Sales took place yesterday in Mincing Lane, when we learn by a telegram received this morning through Reuter that the quantity offered amounted to 700 Bales, of which 600 found buyers. The market was excited, and consequently prices ranged from those which ruled at the May Auctions to 2d higher. The telegram adds, "reported large advance believed fictitious." It is somewhat difficult to determine exactly what this means as the sentence now stands; but if the word *shipments* be substituted for *advance*, it would make it clear that the heavy shipments which would appear to have been reported as coming from Ceylon were believed to be fictitious—hence the excitement and the consequent rise in value. Prior to the auctions telegrams were received wanting Cinnamon; but the knowing ones would not entertain any offer whatever, seeing that the exports were comparatively small. The next sales may see a drop of 2d.; but we hope that the price will be maintained. The prices realised at the May Sales for Ordinary were as follows:—

No. 1	9d.
2	8½d.
3	8d.
4	7d.

The comparison, therefore, with the August Auctions will be:—

No. 1	11d.
2	10½d.
3	10d.
4	9d.

Cinnamon Chips are badly wanted today, and R56 has been quoted per Candy.—Local "Examiner."

A LARGE ORDER FOR QUININE.

General Martinez Campos has asked for 600 kilogrammes of quinine for the army in Cuba. The Spanish Minister of War has consequently ordered that this enormous quantity of quinine be procured at once, and on consulting the chief of the military laboratory 200 kilos. was promised to be ready for delivery during the present month.—*Pharmaceutical Journal, Aug. 18.*

CHINA TEA IN SOUTH AFRICA.

As everybody knows, China tea is being rapidly ousted from the European market by the leaf of India and Ceylon, and not even the divorce of the rupee from silver, caused by the closure of the Indian mints, has arrested the movement. On the other hand, it is curious to find indications of a boom in China tea in the South African market. The steamer "Umkuzi," the name of which faintly recalls Mr. Rider Haggard's novels, cleared for Natal and other South African ports on the 10th current, carrying no fewer than 12,416 chests of China tea which had been transhipped at Calcutta from Hongkong. Algoa Bay takes 7,568 chests, Natal 1,920, Cape Town 1,570, the remainder being divided between East London, Delagoa Bay and Morrell Bay. These figures bulk largely when compared with the export of Indian tea to South Africa, which in 1894-95 was only 19,986 lb.—*Pioneer.*

A GLUT IN THE TOBACCO MARKET.

At Amsterdam, a cry of alarm has been raised that there is too much tobacco in the market. The *Deli Courant* finds that there are good grounds now for fearing a glut in the tobacco market in the near future. Experts hold that danger arises the moment the output of tobacco in Deli exceeds 200,000 bales a year. That limit was reached by the crop of 1894. The outlook in 1895 points also to a heavy yield, and, should matters not mend, a crash is unavoidable in 1896 or 1897.

SUCCESSFUL AGRI-HORTICULTURAL SHOW IN THE STRAITS SETTLEMENTS.

From Mr. A. B. Stephens' Report on the Agri-Horticultural Show Held at Batu Gajah on the 12th and 13th July, 1895, we quote a few paragraphs:—

Economic Products—was a poor show compared with last year, a sugar cane from Matang 35 feet long getting one of the first prizes. Coconuts were very fine, the best coming from Setiawana. Coffee had 12 native exhibits. Copra was exceedingly fine. Seven lots of oils were shewn. Rattan was well represented, so was pepper, 20 lots being exhibited, Gapis Estate being first, Syed Musa second. Tapioca flour had 16 exhibits, but tapioca only one. Waterloo and Kamuning each worn first price for Arabian and Liberian Coffee, respectively.

Minerals.—This was a new departure and a number of valuable collections of Ore and Minerals were shewn—Mr. C. Wray's being the best, then came Mr. Fincham's, Mr. Plumbe's and others also being good. A very good working model of a mine was erected and the whole smelting operations for tin were shewn.

Elephants.—About forty animals were shewn, a very handsome spectacle—only about five elephants were exhibited at our Taiping Show. The elephant race was very amusing and a close finish witnessed; the elephants were afterwards put over some obstacles.

The Larut gaol sent three railway truck loads of rattan and wood-work exhibits of furniture, and they were so much admired that not a single article remained unsold and H.H. the Sultan of Kedah wished to buy the whole lot as they stood.

The gentlemen who took charge of the different sections worked hard to make their divisions a success. Messrs. Metcalfe, Berwick, Cox, Harfleet and Fincham working exceedingly hard, and to the last named is due all that was shewn in the Mining Deparment. Mr. Hanson gave me a great deal of assistance, and to him I owe the wire fencing which have such a finished appearance to the buildings generally. Mr. Marks did a great deal of hard work and was always ready and willing to push on everything, and to him a great deal of the success of the Show is due.

For the outside districts, as far as one could judge by results, I would mention Mr. Voules first, then Mr. Berkeley, who managed the elephants, etc., so well, and then Mr. Bowen, who if he did not win many prizes, tried hard. Lower Perak and Krian sent a great number of handsome and valuable exhibits, Upper Perak, Batang Padang and Larut sent very few exhibits. Kuala Kangsar had most of the fruit exhibits and got the prizes for them.—*Perak Government Gazette, Aug. 16.*

Coffee Notes.—The *Popular de Taubaté* tells of two planters who gather their coffee with the pulp already removed, this service being performed for them by bats, which eat the pulp as fast as the coffee ripens. This species of bat should be cultivated!

COFFEE IN HAPUTALE.

Fields White with Blossom.

Coffee blossom full out today, and a really fine show, nothing to equal it for some years. Weather for setting has so far been all that could be wished. Leaf disease disappeared some time ago, and has not been bad at all this season. Up to date green bug practically nil. I wonder if the old king is really to take a new lease of life. I returned yesterday morning from a tour round the Haputale side of the district: Coffee on Nayabedde was one white sheet; not so much on Gonamotava and Roehampton. I understand they have just finished gathering a very big crop. Haputale and Sherwood, especially the latter, was a sight sufficient to gladden the heart of any old stager who can remember the blossoms of the sixties. Thotalagalla was very fine on their big acreage of fine coffee left. I would say they had blossom for an average of 4 cwt an acre, and on a few acres here and there more than double. Pita Ratmalie had also a good blossom; but somewhat patchy. On this estate it is reported the proprietors contemplate opening a hundred acres of their fine forest reserve in *coffee* next season, so that faith in the old king is also reviving. Nothing could look better than the coffee on Dambatenne, and that just after giving a crop of over 5 cwt an acre. Not so dusty in these degenerate days!—*Cor.* 27th. Aug.

THE U. P. A. S. I.

Thursday evening witnessed the conclusion of the second Annual General Meeting of the United Planters' Association of Southern India, which had assembled at Bangalore. The business before the meeting was transacted without waste of time and a perusal of the Report leads to the conclusion that the delegates have grown more familiar with the rules and customs of debate than heretofore. Thirteen District Associations were represented, one of which was that of the Coorg Native Planters. The Mysore Native planters had no delegate this year, Mr. Subbaiya, the President of the S.M.N.P.A., being prevented at the last moment from attending on account of ill-health. Mr. Digby T. Brett, who had made an efficient President for two years, retired and in his place Mr. Sprott, of North Coorg, was elected; Mr. Hockin, of Wynaad, being chosen Vice-President to fill the vacancy caused by the retirement of Mr. G R Evans, of South Coorg. Two or three well known faces were missed, the most notable absentee being Mr. Thomas Clarke, of South Travancore. However, his place was taken by Mr. Acworth, Honorary Secretary of the Central Travancore Association, who represented the whole planting community of the Province and who took a leading and able part in all the debates. On the last day a vote of thanks to H. E. Lord Wenlock was carried with acclamation for the sympathy and consideration which he has always shown to any representation of grievances or requirements from the United Association.

Turning now to the business transacted during the three days that the meetings sat; undoubtedly the most important question that came up for discussion was the deputation to the Viceroy. the greatest weight should be attached to the appoinment of a Committee of Enquiry. The primary object to be attained is, we understand, not the redress of certain grievances, but the education of the Government of India in the circumstances which surround the planting industry in Southern India.

A fairly long discussion arose on the question of the affiliation of the United Association with the London Chamber of Commerce, some gentlemen being of opinion that such an action would be prejudicial to the planting interests. This is a subject on which a great deal can be said on both sides, so we will merely observe that it is a tentative proposal; that he affiliation can be subsequently cancelled if deemed advisable, and that in Mr. Sanderson, a well-known broker of Mincing Lane, a representative has been obtained who is in close touch with the planters of Southern India and who can be safely trusted to advance a their interests by every means within his power. We are surprised that no mention was made of affiliation with the Indian Tea Association of Calcutta, an important organisation whose aid might be found invaluable at times when questions in which the Supreme Government is directly concerned are brought up. Mr. Acworth spoke at some length on the Ceylon Import Duty on Indian teas, but we are unable to follow his line of argument. Ceylon tea, as we know, is usually sold in England in packets, being first blended with Indian tea. But, said Mr. Acworth, it is a mere piece of clap-trap to say that Ceylon men wish to prohibit their teas being blended with an inferior article. By an inferior article, be it distinctly understood, a Ceylon man means cheap China trash. Considering the situation of Colombo we consider the danger a very real one if ever blending became a big business in that island, as it probably would if the import duty were removed. If Mr. Ackworth would tell us exactly what the Travancore planter wants in this direction, he would place the matter in a better position than it stands at present and enable Ceylon to know exactly what the Indian tea-planter requires.—*M. Mail.*

The Second Annual Meeting.

Second Day.

(From our Special Correspondent.)

Bangalore, 21st Aug. 1895.

CEYLON IMPORT DUTY ON INDIAN TEAS.

This was the next subject for discussion.

Mr. G. L. Yonge (Secretary) read the correspondence with the Ceylon Government on the question.

Mr. G. L. Acworth (C. Travancore) said:—

Mr. Chairman and Gentlemen,—I do not know if anybody has seen the Ceylon papers which gave an account of the meeting of the Ceylon Traders Association at which our letter was read. They were handed over to me, and when I read the account I was exceedingly surprised that what purported to be a dignified meeting could deal with such a letter in so flippant and almost insolent a tone. One argument brought forward for the import duty was "why should not we have it? Ours is only 6½ per cent, while they have only 5 per cent in India." That is not the case. The import duty, on tea in Ceylon is 25 cents. That is, roughly speaking, from 3½ to 4d. That is pretty nearly 50 per cent of the value of Ceylon tea in London. Another argument they used was that they wished to prohibit their teas from being blended with inferior articles. That is a mere piece of claptrap. As a matter of fact, Ceylon tea, it is very well known, is hardly sold in England at all except in packets. There is not the slightest doubt if, in spite of all the spacious advertisements at the railway stations, &c., it is blended with Indian teas, that the people will hardly drink it without this. When my tea was first sent to England some years ago my broker said, "Don't trouble yourself about the flavour, we don't want that; we can get flavoury tea from Upper India. What we want is good strong liquoring tea." Ceylon has taken the place of China tea, and we want something to fortify it. I am a great admirer of the Ceylon planter; I admire his energy, push, perseverance and pluck, but at the same time he need not crow so loudly about it himself. Personally I do not much care about the duty being removed. I do not send my tea to Ceylon now, and I am not likely to send any. But the Association I represent is very strong on the subject, and I was particularly asked by the South Travancore Association to speak about it. I think myself the Ceylon planters are a good deal blind, or at any rate the Ceylon merchants are blind to their own interests. They seem to think that our tea would flood their market if blended with theirs. But looking at it from a merchant's point of view, is it not a good thing, does it not

increase the volume of trade, and does it not increase prosperity? For many years there has been a large market in Calcutta for Indian teas. It would have been 25 years ago of great assistance to the Upper Indian Planter if he could have got China tea in the Calcutta market to blend with his own. For nothing was more unpopular when they were first introduced than the Indian teas in the London market. Everybody spoke against it. I well remember the time. It would have been an excellent thing for the Calcutta planters to have got China tea to blend with their own, marked the chests as Indian tea, and sold it as Indian tea in London. This was never done, and I never heard of its being done. I cannot see how there can be any more danger of the Colombo market being flooded with our tea than the Calcutta market could be flooded with China tea. At any rate, there is not the slightest doubt that the enormous duty on Indian tea is contrary entirely to the spirit of British legislation or British trade. As the removal of it might be of use to the growers of Indian tea, I beg to move the following resolution:—"That in the event of an unfavourable reply from the Governor of Ceylon, the Secretary of this Association be requested to again address him with a view to the abolition of the heavy import on tea."

The Hon'ble Mr. G. ROMILLY (Wynaad,)—In seconding this resolution, I should like to add a few words. When I went to Ceylon I was given to understand that there was a very strong feeling in Travancore on the subjects which apparently does not exist. At any rate, I thought it a good thing to see H. E. the Governor of Ceylon on the matter. I see that in a leading article the *Ceylon Observer* does not take up the same attitude as the Ceylon Traders' Association, and certainly from the conversation I had with the planters upcountry, I am perfectly certain that the planters themselves would not treat our letter with derision.

The resolution was put to the vote and carried.—*Madras Times.*

TEA PACKERS.

With reference to these machines we may mention that one of the Davidson-Maguire packers has been tried on Gammadua estate—among others—with excellent results, namely 10,000 lb. of tea packed as follows:—Broken Pekoe 2,666 lb. in an hour, at the rate of 110 per chest; with pekoes 2205 lb. packed per hour, packing 105 lb each chest; of souchong and coarse teas, the packing was at the rate of 1,710 lb per hour or 96 per chest.

BOUND FOR EAST AFRICA.

AN IMPORTANT APPOINTMENT.

Count Von Zech leaves Ceylon tomorrow for German East Africa. In January 1889 the Count first came to the island. where he made a short stay, afterwards taking up an important position as Director of the German New Guinea Company. In April last Count Von Zech returned to Ceylon and since then he has been engaged in acquiring knowledge of planting matters In this he has shown much aptitude and he now leaves Ceylon well equipped with a knowledge of high and low country planting in the matter of tea, coffee, and coconut cultivation. Count Van Zech's latest appointment is one on which we desire to heartily congratulate him. He has been appointed Imperial Commissioner in Usembara, German East Africa. This important advancement will be learned with pleasure by his many friends in Ceylon, more particularly in Kandy where he has resided for some time. The New Imperial Commissioner leaves by the N.D. "Preussen" tomorrow. At Aden he will tranship and proceed to Dar es, Salem, where he will present his credentials to the Governor, the well known Major Von Wiseman.

PEERMAAD PLANTING NOTES.

Another estate, Arnakal has now got machinery, having for its motive power an oil engine, which it is hoped will be a success, for on many estates where the water in the dry weather is so deficient it is the only power which could be used. Although oil engines have not met with much favour in Ceylon there is no reason why they should not be successful. Their cost is not more, probably not so much as a steam engine, neither is the up-keep more expensive, for the consumption of oil is not great and they do not require a man in constant attendance while working. Once set going in the morning they can be left to run by themselves till work is over for the day.—*Cor. Western Star.*

SELANGOR NOTES.

Mr. J. H. French, Assistant Treasurer, Selangor, after a long spell in Ceylon and the Straits, is now going home on well earned leave.

The new Pension notification, whereby officers in the Selangor Service will in future draw their pensions at a lesser rate of exchange than at present exists for this purpose, provided they receive an increase of ten per cent on their salary during the rest of their service in the state, was a surprise to all concerned. Nobody expects to work for 10, 15 or 20 years without promotion, so that it practically means goodbye to a four shilling pension for all officers concerned, with perhaps 2 per cent exceptions. Nor apparently can this rate be relied on. There is no reason why the rate should not be further reduced.—*Singapore Free Press.*

Mr. H. M. STANLEY ON TROPICAL AFRICA AND ITS DEVELOPMENT.

REFERENCES TO CEYLON.

One of the most interesting speeches at the Geographical Congress was made by Mr. H. M. Stanley, the intrepid explorer of "Darkest Africa," and the newly-elected Unionist Member of Parliament for North Lambeth, in the course of the discussion following a valuable paper read by Sir John Kirk, who took as his subject the important question of the extent to which Africa is suited for development by white races. Mr. Stanley, who was very warmly received, said he thoroughly agreed with the paper read by Sir John Kirk. It was a wise and an able paper, but he thought it looked too far ahead. Sir John talked about the fitness of Africa for colonisation, but so far, in Central Africa he knew no intention to colonise any part of it. He did know, however, of a good many intentions to make the thing possible in the region called Central Africa, and in the way of commerce, in the way of improving the blacks, and in the way of making the country fit for colonisation in the distant future. Their aims on the Congo were simply to develop the commercial possibilities of that region and prepare the way for those who would exploit the products of Africa. In 1876 and 1877 he descended the Congo, and he was then possibly as great a pessimist as any one could be. When he saw the immense river expanding broader and broader, and the shallows increasing, it seemed impossible that the river should ever be able to be invaded by a flotilla of steamers. But after diverging from one channel to another he found there was a certain rule and mode to be kept in the navigation, and possibly steamers might be constructed which would be able to go over the shallows and find the deeper channels. Then, on looking at the banks, he found there were certain seasons when the river rose very high, and finally he came to a place where the river contracted

and gave them an enormous depth. It was not, however, till he reached the sea and could take the whole question broadly into view that he saw the possibilities of the Congo, and he wrote in the last letter he sent from the mouth of the Congo in 1877 :—"The time will come when this great river, now known for the first time, will be an international question. Happy the nation that will take time by the forelock, and be warned." They all knew the way they set about founding the State of the Congo. They did not lose any time in studying scientific geography. He had never seen a Colony that had been founded upon scientific geography. He asked what was known of scientific geography by John Smith, founder of Virginia, by the Pilgrim Fathers, by Cortes and Pizarro, or by the founders of New Zealand and Australia. To take another instance—Cecil Rhodes, the redoubtable hero of South Africa—he doubted very much whether he knew anything about scientific geography, and yet he had planned Colonies so vast as to be the wonder of the century. He did believe, Mr. Stanley continued, in pioneering slowly and cautiously, and not going too recklessly into rash enterprises. The pioneer must clear the way, find out whether a country was liable or not, and he must try to make the mechanical instruments of civilisation do for him a part of the work, such as travelling. On the Congo they had something like 40 steamers and 800 white men, where 16 years ago there was not one. Now, if those men had to travel on shanks's mare, with all the knowledge of science they might have, he doubted very much whether they would go very far ; but, being taken aboard those vast steamers, they could travel thousands of miles north and south, east and west. So now they had the whole of the Congo basin navigated, and this was what they were trying to get the British Government to do in British East Africa. They thought they would be able to show that Central Africa was just as livable as India or Brazil. It required Sir Samuel Baker to go up to the mountainous parts of Ceylon to find that that region was capable of supporting English families and children. They had also found that English people and English children could live on the Congo. When they had completed the railway to Stanley Pool, and had got steamers going 15 or 16 knots instead of six or seven, and when they had got telegraph stations, they would have done wonders, and by that time they would have carried hotels and all necessaries of civilisation into those regions. People went to Africa and found that there were no hansom cabs, that they could not even get a cup of *café au lait*, that if they offered a thousand pounds for a loaf of white bread they could not get it. They found they had to carry their house and stores on their backs. So they went home at once and condemned Africa. Now that was not the way to look at a great region. India had been the white man's grave, but they found people there who never thought of going over to England. They found people in Brazil who never thought of going to Portugal, their mother country; people in Chili, Peru, and Mexico, who never thought of going to Spain, who had made their homes there and intended to live and die there; and the time would come when the whole of Central Africa, barring the maritime regions, of course, would be in the same position as Mexico and Brazil and Ceylon. But it took a long time for a nation to learn how to live. He had been in a certain State in the United States where there were more fevers in 24 hours than could be found in any part of Africa. He was constrained to live in it for a certain number of months, and he had more fevers in that time than he had in five years in Africa. At that time that State contained only 425,000 men, women, and children, and now it contained 1,650,000. Why? Not because they had learned science, he was sure, but because they had learned the art of living. Take, on the other hand, New York. There they had a great city growing from year to year, and yet the most inventive people in the world had not learnt the art of living in hot weather. It was the same in Australia. A little commonsense only, not the study of scientific geography, would have enabled them to live, and people would have been able to pass safely from one street to the other instead of being stricken by the sun. It was the art of living they needed to teach in tropical countries. He had tried to teach young men from England and Scotland how to live in Africa, but he invariably failed, because if one saw one's good advice rejected, one got sick and tired of preaching it. He had seen a young fellow who, after going there with a whole-souled desire to distinguish himself, walked under the very hottest sun with a black cloth cap he was accustomed to wear in the temperate regions of Scotland. That man never returned to Scotland. He had seen another too fond of the liquor bottle, and he had said :—"My dear fellow, you do not need Dutch courage in this country any more than you need it in your own. Take a teaspoonful at night as a nightcap if you want it, but not in the day, when the sun is hot. Take a tabloid of quinine. That will be ever so much better." But those men never returned. He had gone himself seven times into Africa, twice across, and altogether he had been there 23 years, and he felt just as strong today as though he had never been there. He mentioned various other cases of men who had lived in Africa for many years and were quite as healthy as when they went to it. At present we were sending young men fresh from the college and from the University, fresh from their mothers' laps, into Africa, and they perished almost the first day they found a different atmosphere and a different sun. Before sending these young men into Africa they should go and study for two or three months the various arts of conquering these fevers, warding them off, and living wisely.—*Colonies and India.*

COFFEE CULTURE IN HONDURAS.

The United States Consul at Tegucigalpa in a recent report to his Government deals with the subject of the prospects of coffee culture in Honduras, and states ;—

"The cultivation of the coffee plant is yet in its infancy in the Republic of Honduras. While there are numerous so-called plantations of coffee, they are small and indifferently cared for, and, consequently, the production is far from being up to the proper standard.

"The soil, climate, and conditions in Honduras are equal in every respect to those of Guatemala, Nicaragua or Costa Rica, where the coffee industry has already reached large proportions. The only drawback in Honduras is lack of means of transportation and facilities for shipment to the coast. At present there is practically no exportation of coffee from Honduras, the product of the plantations being readily sold at home. I have known the price of coffee, even in time of peace, to reach the sum of 40 cents (gold) per pound, and in time of war, as much as 75 cents, notwithstanding the splendid adaptation of the country to its production.

"The Honduran coffee is equal in every respect to the Mexican, Guatemala or Costa Rica on product,

and is well known to be of a superior quality, commanding a price in the great markets of from 20 to 25 cents per pound.

"In the Republic of Honduras land can be had in either of three ways—by direct concession from the Government or municipalities, by pre-emption under the agricultural law, or by direct purchase from individuals. In the first two ways the lands will cost nothing, or a nominal price; in the latter the lands will cost from $5 to $10 per acre.

"A new plantation of coffee will commence to produce a profit by the end of the fourth year after planting, and after the seventh year a profit of from 100 to 300 per cent. on the capital invested may be expected. The average cost of the production of coffee, after the plantation is well started and five years old, will not exceed 7 cents per pound.

"The preparation of the land for a coffee plantation will consist only of clearing it off well and keeping it clean. The young trees are to be secured from a nursery and cost from $10 per thousand. Nurseries of course, are maintained on every plantation. The young trees are planted from 10 to 12 feet apart, in regular rows, like an orchard in the United States, and the holes are dug about 1 foot square and 15 inches deep.—*Planters' Monthly*.

VARIOUS PLANTING NOTES.

THE ESTATES COMPANY OF UVA LIMITED,—we learn officially, have paid an Interim Dividend of 4 per cent for 1895. We congratulate the shareholders.

COFFEE CULTIVATION IN JAVA.—The statutes have been published of the French-Netherlands Java Agricultural Company with a capital of fl 200,000, fully taken up. The object is the cultivation of coffee and other produce in Java.—*L. and C. Express*.

A KAURI TREE blown down recently in Western Australia measured 174 ft. from the roots to the first branch, where it was 14 ft. in circumstance. Mr. J. Ednie Brown, the forestry expert, cut down a Karri 160 ft. high, which he estimated to be only 35 years old.—*Australasian*.

"LADY-BIRDS" FOR COFFEE.—We direct attention to an interesting letter from Mr. E. E. Green by this mail. We hope a full measure of success will crown Mr. Green's experiment and then he will indeed be a benefactor of coffee in Ceylon.

THE PINEAPPLE TRADE OF SINGAPORE has expanded greatly within the last few years. There are now ten European firms and nine Chinese firms engaged in the business, and the annual exports amount to 150,000 two-dozen cases of preserved pine, valued $200,000. The pineapple is preserved whole and retains its delicious juciness.—*M. Times*

CINNAMON.—The "Imperial Institute Journal" to hand by the French steamer contains a paper on "Cinnamon of Ceylon," by Mr. Peter de Abrew of Colombo. There is nothing new to us in Ceylon; but the information is concisely compiled—from our "All about Spices" and "Planting Review" among other sources.

ENGLISH PATENT.—4,741. March 6th, 1894. Packing, tea, coffee, etc. Moore, J. H., 7, Jansen Road, Leytonstone Road, Stratford, and Inger, J., 28, Minories, both in London. Tea, coffee, cocoa, and the like are packed in small quantities in a transparent wrapper preferably of gelatine, which is soluble in the water, milk, or other liquid used for making the infusion of tea, etc. The package is encircled by a paper band bearing a description of the contents. It may also contain a caramel made by desolving about a pound of sugar in a quart of milk heating till the mixture becomes pasty, then solidifying it by cooling, and finally cutting up and coating with sugar.—*Patent Journal*, July 31.

INDIAN LABOUR IN WEST AUSTRALIA.—Mr. Adulje Dinsha, a wealth Parsee merchant at Perth, Western Australia, has been fined £100 by the local bench of magistrates for importing 40 Indian labourers without first entering into an agreement under the Imported Labour Registry Act.—*Times of India*, Sept. 2nd.

COCOA AND SUGAR IN TRINIDAD.—The exports of sugar from Trinidad this season keep well ahead of those of last year, and the expectation of a considerably larger crop will be fully realised. Cocoa also shows an excess over the hitherto record year (1892). Picking is now reported over, and attention is being already directed to the fall crop, accounts of which from various parts of the island being very conflicting. The weather when last mail left had been favourable, so that agriculturists generally were satisfied.—*E. Mail*.

TRAVANCORE PLANTERS' ASSOCIATION.—A meeting of the Travancore Planters' Association was held at the Club, Trivandrum, on the 14th inst. It was unanimously agreed to continue the subscriptions to the American Tea Fund. Mr. Acworth has been asked to represent the Association at the Annual Meeting of the Central Planters' Association of Southern India. Thus Mr. Acworth will find himself with 5 votes out of ten at his disposal *viz.* Central Travancore, Travancore, Kannan Daven, North Mysore State, South Mysore State.

REFORM OF BRITISH WEIGHTS AND MEASURES.—The Report of the Select Committee appointed to enquire whether any, and what changes in the present system of weights and measures should be adopted, has been published as a Parliamentary paper. It is recommended, according to *Nature*:—

(a.) That the metrical system of weights and measures be at once legalized for all purposes.

(b.) That after a lapse of two years the metrical system be rendered compulsory by Act of Parliament.

(c.) That the metrical system of weights and measures be taught in all public elementary schools as a necessary and integral part of arithmetic, and that decimals be introduced at an earlier period of the School curriculum than is the case at present.

THE HEAT OF THE SUN AS POWER.—If the coal mines of the world were exhausted, it would be a relief to know that other great sources of power are at our command; that no distress would ensue with such rapidity as to deprive us of a means of warmth. In fact our own mother country, England, has been contemplating the time when her fuel centres will have become diminished and the burrowed catacombs reaching far out beneath the ocean's bed will have been emptied of their precious deposits. Then the miner will take his pick and shovel and mount upward to the air and glistering sunlight. It will not be a useless errand to move towards the sun's light, because it is here, if all ether resources fail, that we may look for greater power and wider possibilities. It is not the buried sunlight of the past ages that we need look for any more, for that is for ever gone. The heat of the sun, the living, reviving rays of our parent planet, will yield its energy for countless years to come to warm our bodies and light our homes. John Ericsson invented a machine with which he believed we would be independent of the coal supply, and make direct use of the heat rays of the sun. It might have been called a sun steam-engine—a steam-engine heated by sun-light. The vast tracts of the Sahara or the deserts of Asia can supply heat that would generate millions of horse-power in Ericsson's solar engines. The torrent of Niagara is not comparable to the incalculable waste of power on the scorching surface of these enormous plains. The engineering schemes of today will fade into insignificance in comparison with those that the fierce cry of future necessity will force men to execute. It would be a curious sight to see a fully equipped power-station situated in the centre of a dreary waste sending its threadlike lines across the desert to heat and light some distant town, thus guiding the warm sunlight that it may glow and glitter in the mosques and minarets of the Far East.—*Electrical Age* (*U.S.*)

AGRICULTURAL INDUSTRIES IN TRINIDAD AND BRITISH GUIANA.

A Commission in British Guiana has been inquiring how to "further the production of minor agricultural industries" and the Colonial Secretary in its behalf applied to the Government of Trinidad, for all the information available there on the subject. The matter was naturally referred to Mr. Hart of the Botanic Gardens who regarded it as "a large order"; but promised to collect a set of his Reports, although these had, in reality, been regularly forwarded to Mr. Jenman of the Guiana Botanical Department. Mr. Hart added the following pithy and practical paragraphs in his preliminary reply to his Government—paragraphs that carry a lesson for Colonies in the Far East as well as in the Far West:—

"While prices rule low, Sugar planters are specially kind to the Subsidiary Industries, but when prices are remunerative, they are, as a rule, at once put aside."

"How often I have advocated the planting of Logwood here, the Government knows, yet in only one or two instances has either Sugar or Cacao planter attempted to plant it. Yet I know of estates in Jamaica abandoned by sugar planters, which have paid their purchase money by the sale of the logwood grown on them, and many an abandoned sugar estate now pays as much or more in taxes to the Government (sold out as it is in lots to the settlers who grow "minor" produce) than when it was in full running as a sugar estate. Ruin of sugar estate proprietors, does not necessarily mean ruin to the country, but simply ruin to individuals. At least this is the outcome of the abandonment of estates in Jamaica in many cases. The sugar planter however docs not see with the same eyes as a completely disinterested person."

However, Mr. Hart set about writing a special or as he calls it,—"A short Progress Report on the Agricultural Industries of Trinidad, excluding Sugar." It is certainly comprehensive as well as concise, and we are not surprised at its securing the special praise of Governor Napier Broome who had it published forthwith for local and general use. We shall probably reprint it in full in our *Tropical Agriculturist*, meantime remarking that Mr. Hart shews the Trinidad Cacao crop of 1894—21,608,384 lb.—to be almost identical with that of 1890, although the crop for 1892 was nearly 3½ million lb. ahead. Alternate crops of cacao seem to be the rule in Trinidad as they assuredly have been in Ceylon, although our highest crop of cacao in Ceylon as yet has only reached to 30,658 cwt. (in 1893) or 3,433,696 lb., against more than seven times that quantity for the maximum in Trinidad.

In sending in his report, Mr. Hart called special attention to a remark made by the Expert of Fibres at the Indian and Colonial Exhibition, as follows:—

"The authorities in the several islands should decide generally that the growth and preparation of a Fibre is desirable; then a particular Fibre, the best for each locality, should be selected, and the trade in that fibre thoroughly organized. The importance of an organization cannot be over-estimated, and in support of this we may cite the case of the trade in 'Jute.' There are as we know from the results of investigations, not a few fibres capable of replacing this particular cast, some in fact being superior in all essentials. Nevertheless the trade in Jute holds its own unassailed, and the cause in so far as it does not reside in intrinsic superiority and commercial fitness must be sought in the concentration of attention upon this fibre, and the resulting organization of the trade. These facts deserve to be borne in mind by all who are contemplating the founding of any such enterprize."

The Report itself is, as we have said, both full and concise: it is divided into the following sections:—(1) Produce used for the Preparation of Dietetic Beverages; (2) Cereals (including maize, rice, sorghum, pigeon and congo pea, ground nut, &c.); (3) Starches (cassava), &c.); 5) Dyes and Tannin (including divi-divi, gambier, mangrove, &c.); (5) Vegetable Oils; (6) Fruits (a great variety; a large trade in bananas as well as in oranges and lemons for the American market, being anticipated); (7) Spices; (8) Rubbers (Mr. Hart anticipates that Castilloa rubber, 200 trees to the acre, should yield at the 7th to 8th year 2 to 3 lb. per tree equal to a gross return of £60 per acre!); (9) Fibres; (10) Timbers (about which Mr. Hart says that an estate planted with mahogany and cedar, once established, would pay better than the best forest-land in Europe,—mahogany growing 1 inch in diameter per annum; the latter, cedar 1½ inch); (11) Miscellaneous (cinchona, tobacco and sarsaparilla). In conclusion, Mr. Hart winds up with some sensible general remarks, shewing that the practical planter has to find out what can really be well (and we must add, profitably) grown; and he gives it as his opinion that in British Guiana and Trinidad as in the West Indies generally,—the most encouraging of the so-called minor or subsidiary industries are:—Rubbers, Fibres, Kola, Dyewoods and Timbers. It remains to be seen in Ceylon whether the demand for Rhea fibre is likely to be so much beyond the natural supply as to warrant cultivation. Sapan wood for a dye is a favourite growth on many lowcountry estate boundaries, but we do not suppose, the profit encourages extensive culture. Many of our planters will erelong be able to shew what useful if not valuable timber trees can do for them at different elevations; and quietly but carefully on a few plantations at least is a sufficient trial being given to rubber, though not in so many districts as we should like to see it planted in Ceylon. Altogether, Mr. Hart's Report when it appears in full in our *Tropical Agriculturist*, will deserve the careful attention of all sub-tropical planters in Southern India, the Straits, Borneo, East Africa as well as in Ceylon.

THE OTTERY TEA COMPANY OF CEYLON, LIMITED.

The Memorandum and Articles of Association of "The Ottery Tea Company of Ceylon, Limited," are published in the *Gazette*. 3. The objects for which this Company is established are—among others—To acquire the Ottery estate and half of Stamford Hill estate, subject as to the Ottery estate to a mortage, whereof £2,500 sterling remains due, situated in the Dikoya District of the Island of Ceylon; to farm, manufacture, or cultivate tea, and (or) any other products or trees, plants, or crops which may hereafter be approved; to purchase tea leaf and (or) other raw products for manufacture, manipulation, or sale. The capital of this Company is R500,000, divided into five thousand shares of R100 each, with power to increase or reduce the capital. The following have each taken one share:—Harry Creasy, W. Bridgeman Kingsbury, Robt. H. S. Scott, Frances Augusta Scott, F. R. Cyril Coleridge, Emily Joanna Coleridge, and Celia Elizabeth Coleridge.

VICTORIA REGIA IN THE GORDON GARDENS.

The plants that were sent from Madras died, I believe from not being sufficiently established before being sent over, this was no doubt due to their anxiety to send the Government plants as soon as possible. The seeds have germinated very well:—11 have started and more may yet come up, so that all going well in a month or 6 weeks' time there will be an ample supply of plants for the Gordon Gardens.—*Cor.*

THE WANARAJAH TEA COMPANY OF CEYLON, LTD.

The annual general meeting of this Company was held in the office of the agents Messrs. Baker S. Hall on 31st August. There were present:—Messrs. J. C. Dunbar, (Chairman); and Thos. Mackie, (Directors); J. G. Wardrop, J. Clark, L. Davidson, A. Stevenson, snr. The following were represented by proxy:—Mr. Keith Rollo, Mrs. M. Rollo, Messrs. A. Orchard, H. M. Alleyn, J. Macliesh, Eric S. Anderson, R. H. Eliot, Geo. Noel and F. H. Wiggin.

The following is the report:—

The Directors have the pleasure to lay before the Shareholders their Report, Balance Sheet, and Profit and Loss Account for the season ending 30th June 1895.

In pursuance of a special resolution passed at a general meeting of the Shareholders on the 14th day of September, 1894, and confirmed at a meeting held on the 19th day of October, 1894, the capital of the Company was increased from R315,000 to R378,000, by the issue of 125 new shares of R500 each, which were issued at a premium of R100 per share. The premium so obtained, R12,873, as shown in the Balance Sheet, has been appropriated for the purchase of manures for the past and current seasons.

The ordinary working of the estate shows a balance at credit of Profit and Loss Account of R80,473·38 Of this sum an interim dividend of 5 per cent was paid in January last, and the Directors now propose that the balance be disposed of as follows:—

	R. c.
5 per cent off cost of Buildings (Depreciation Account) ..	2,271 60
10 per cent off cost of Machinery (Depreciation Account) ..	2,028 45
Dividend of 7 per cent	26.460 00
Balance carried forward	30,813 33
Total ..	61,573 38

The satisfactory result of this year's working may be mainly attributed to the good coffee crop secured, and the favourable prices obtained for this product as well as for the teas, the latter netting nearly 64 cents per pound as far as yet ascertained.

The general condition of the estate has been most favourably reported upon by the Visiting Agent.

The weeding, which has always been such an important and expensive work on this property, continues to show a marked improvement, and it is to be hoped that reductions will be made until the average cost per acre is in accordance with the general rate in the district.

The young tea planted under the coffee continues to fill out, while the forest clearings show good and even growth.

The suppling of the estate throughout had had careful attention.

Manure —The effects of manure are so encouraging, that the Directors have been induced to apply the premium on shares to this work, as they are confident that the benefit to be derived by the Shareholders will be shewn by increased returns in the near future.

Buildings and Machinery.—The water-course, which gave some trouble, as mentioned in the last report, is now in a sound condition. A set of lines were put up to suit this year's new clearing

The extension of tea cultivation this year is limited to a clearing of 72½ acres, the works of which are progressing and well forward.

Prospects for current season are, as regards coffee, not favourable, some 200 to 300 bushels only being expected.

Tea, on the contrary, shows a considerable increase, the estimate being 170,000 lb. as against 117,697 lb. secured in 1894/1895.

Labour supply is in a satisfactory state, and the amount outstanding for coast advances is reasonable

The Directors who retire by rotation, Messrs. A. Cantlay and J. W. Vandorstraaten, being eligible, offer themselves for re-election.

Mr. Guthrie, the Auditor, offers himself for re-election. By order of the Board of Directors,
Baker & Hall, Agents and Secretaries.

The Chairman in addressing the shareholders asked them to accept the report as read and addressed the meeting as follows:—I do not intend to delay you long today, as I think such a satisfactory report needs little comment; however as at the meeting of directors this morning a letter was laid on the table from one of the shareholders, asking for information on various points, I consider I cannot do better than answer these now, The first matter in the report for consideration is the premium on shares; this might have been paid back to the shareholders in the form of dividend, or placed to a reserve fund proper; but your directors think it better that the money should be utilised for manuring, as the V.A. and manager report so favourably on the effects of the manure applied to date. It is however for you, gentlemen, to confirm or not our action which I may say is quite in order under J.S.O. No. 4 of 1861 and clause 77 of the Company's Articles of Association. The next item in the balance sheet is the amount written off for depreciation, as our machinery and factory are practically new, I hope you will consider the amount sufficient.

Tea.—Final accounts of sales of tea have now been received and I am glad to say that they show a surplus of R1,435·10 over the amount shown in report. The average nett price obtained for the crop of 117,187 lb. of tea is 65·8.

Coffee.—The disposal of the coffee crop was a matter which gave your directors a great deal of concern. The best offer made locally for the crop of 1st Parchment was R18·50, but as your Directors were aware that R19·25 and over with a falling exchange, had been offered for crops they refused R18·50, and instructed the Agents to ship if they could not obtain R19. Unfortunately the price obtained in London did not come up to the local offer; but your Directors did what, at the time they considered best in the interests of the shareholders. The actual crop was

3,248	bushels	1st parchment.
120	,,	2nd ,,
50	,,	clean coffee.
250	,,	dried cherry.

Acreage.—It may interest you to know the acreage at present under cultivation—we have of

Tea 155	acres planted previous	to	1890
136	,, ,,	in	90
250	,, ,,	in	91
541	under leaf season		1894-95.
300	planted in coffee		1892.
28	,, ,,		1893.
101	,, in Forest		1893.
72½	being planted in		1895.
1037½	acres of Tea		
60	acres Grass and Timber		
26½	Forest.		
1,124			

There was a considerable amount of coffee over nearly the whole of the tea acreage last season, but there were primaries on only 320 acres planted with tea '92 93. Since the completion of the coffee crop these have been removed as they were past bearing. As the tea fields are being pruned, the coffee-suckers are being cut out except on the 320 acres where they are fairly promising and with good luck will give a considerable crop next season. As mentioned in the report the coffee crop for this season is to be a very short one; but the manager writes that he hopes to see the tea estimate of 170,000 lb. considerably exceeded, so that I think gentlemen we are now fairly started on the road for regular and good dividends, even though we do recommend you to carry forward such a large sum as R30,813. Next year if our anticipations are fully realized, you will be able to strengthen your position by putting a considerable sum to reserve fund.

Mr. Alex. Stevenson argued that the accounts as presented were not in order, and proposed the following amendment, which was seconded by Mr. Clark and carried unanimously:—

That the following words and figures be substituted on the credit side of the Profit and Loss account in the place of those appearing under the heading of "*value of tea*" viz.—value of tea sold and estimated "value of tea in store and afloat 117,697 lb." R75,166·07.

It was then proposed by the CHAIRMAN and seconded by Mr. R. DAVIDSON:—"That the report and accounts as amended, be received and adopted," which was carried *nem con.*

The CHAIRMAN stated that the next matter before the meeting was the declaration of a dividend when it was proposed by Mr. CLARK, seconded by Mr. WADROP, and carried,

"That a dividend of 7 per cent be declared payable forthwith, making with 5 per cent paid in February last, a divident of 12 per cent per annum.

It was then proposed by Mr. CLARK, and seconded by Mr. WARDROP,

"That Messrs. CANTLAY and VANDERSTRAATEN be re-elected Directors of the Company."

Mr. ALEX STEVENSON, then proposed and Mr. Davidson seconded,

"That Mr. JOHN GUTHRIE be re-elected Auditor for the ensuing year at a remuneration of R100.

A vote of thanks to the Chairman and Directors for their excellent management of the Company during the past year which was proposed by Mr. CLARK and seconded by Mr. Wardrop, terminated the proceedings.

THE HAPUGAHALANDA TEA CO., LD.

The first annual ordinary general meeting of this Company was held today at 12 noon at the registered office of the Company, 22, Baillie Street, Fort, those present being:—Messrs. Joseph C. Dunbar, Chairman; Thomas Mackie, Director; Wm. Taylor, by his attorney Robert Davidson; Mrs. Grace Stronach, by her attorney Thomas Mackie; R. Lewis M. Brown, by his attorney Robt. Davidson; Robt. Davidson as a shareholder and on behalf of the Agents and Secretaries.

The Report of the Directors for season 1894-95 was taken as read.

Report of the Directors for presentation to the first annual ordinary general meeting of shareholders to be held on 30th August, 1895, at 12 noon.

Your Directors beg to submit their first annual report and accounts for the season ending 30th June, 1895, which they trust may be considered satisfactory.

The quantity of tea manufactured for the season (including estate and bought leaf) was 173,585 lb.

After estimating the unsold tea at a safe valuation, the amount realized for this product has been R85,929·01, which is equal to fully $49\frac{1}{2}$ cents per lb.

An interim dividend of 10% for the half-year ending 31st December, 1894, amounting to R17,000, was paid on 22nd February, 1895.

The sum now available for distribution (after writing off over half of the formation expenses of the Company, and setting aside R1,625 for depreciation on buildings and machinery) is R17,278, out of which the Directors recommend payment of a final dividend of 10%, making 20% for the year, leaving a balance of R278 to be carried forward to the next account.

The prospects for season 1895-96 are favourable.

The CHAIRMAN after proposing the adoption of same said:—"I have not much to add to the very satisfactory report laid before you. The season owing to absence of rain was not quite so good as expected and owing to the necessity of pruning a large acreage the crop secured fell somewhat short of the estimate. This season, however, the prospects are better and there is a considerable increase in the estimate of crop. The Visiting Agent reports very favorably of the general condition of the estate and the vigour of the bushes, especially in the fields pruned some six months ago. Since the publication of the report final account sales of tea for the season have been received and show a surplus over-estimated value of R629·60. This amount has, therefore, to be added to the balance carried forward."

Mr. R. LEWIS M. BROWN, by his attorney ROBT. DAVIDSON, seconded the adoption of the report which was agreed to unanimously.

A vote of thanks to the Chairman, proposed by Mr. THOMAS MACKIE and seconded by Mr. ROBT. DAVIDSON brought the meeting to a close.

TURBINES IN THE KALUTARA DISTRICT.

Mr. Starey is erecting a Turbine on Becherton estate, equal to 20 horse-power, having a full water supply nearly the whole year round.

On Geekiyanakande, a 28 horse-power turbine is being erected, a boring for it being through 100 feet of rock, and here also the water supply is good.

SOME MORE ABOUT CAMPHOR TREES IN CEYLON.

Mr. Nock of the Hakgala Gardens is still experimenting. He made a still and condenser exactly like the one in Spon's Encyclopædia and charged it with 55 lb. of chips from a tree with a stem of 4 or 5 inches in diameter, and which he thinks is about only 6 or 7 years old. The fire was started and steamed away for 12 hours. The air all round about smelling strong and pleasantly of camphor, and the water seemed impregnated with it and even that which ran from under the condensers tasted strongly of it, but when he came to open the condensers, there was no camphor. He doesn't know if he had it too wet or not, but that is the only fault he can think of, and perhaps it was carried off in the water for the coolies? There is something he has not got hold of yet. Mr. Nock noticed in the paragraph in *Observer* of 22nd July: —"What we specially note, however, is that the writer in the vernacular press seems to ignore the important point that Formosa camphor cannot be suitably refined without the addition of the Japanese vegetable." What is the Japanese vegetable and is it an article that has to be put in to make the vapour solidify or what? perhaps there is something in this?

Mr. Nock has one of the camphor trees at Hakgala that grows more like a willow than an oak. This is one that has been coppiced. There are a few small ones, about a year old planted in the Anuradhapura Gardens, and healthier plants no one need wish to see.

CITRONELLA OIL ADVANCING.

The market for citronella oil presents an interesting study just at the moment. The importations during the year which closed July 1st were nearly three times what they were the preceding year, being the largest on record, yet the market price has advanced over fifty per cent during the past six months, owing to a scarcity of oil, which is not confined to this market, but is felt in all commercial centers as well as in the primary market. Truly this is a very anomalous condition of affairs. What brought it about is what everybody interested is anxious to know. The most reasonable explanation that has been advanced is that the prevalence of low prices for several years has largely increased the demand from soapmakers, many of whom had being using some of the cheeper French essences. Especially during the past year has this increase been felt, which resulted in such an enormous export from Ceylon. The course of the market during the past six months is good evidence that the demand still exceeds the supply. The situation is such that lots which were contracted for to be shipped from Ceylon in 1895 will not come forward until December, instead of at intervals during the year, as was expected, which will bring them here in the Spring. The scarcity at the source of supply was first attributed to excessive rains, which were said to have interfered with the distillation, and quite recently to drought. Although the market price has been

in the neighbourhood of twenty-five cent per pound in drums for several years, during which there was a steady increase in the exports from Ceylon, it is among the possibilities that the natives, now that they are sure of a large and increasing outlet for their produce, are desirous of obtaining a higher price than they have been accustomed to, or, perhaps, they cannot keep pace with the increase in the demand. At any rate, the indications point to a further advance in the price before a decline occurs.

We append a table which, with the single exception of the last line, was compiled from the United States Government reports, and includes lemon-grass oil, but as there is comparatively a small amount of this oil imported the figures will serve our purpose, as indicating the growth of the industry. The figures in the last line represent the importation of citronella oil alone:

IMPORTS OF CITRONELLA OIL INTO THE UNITED STATES.

July 1 to June 30.	Pounds.	Value.
1889-90	174,457	$39,818
1890-91	355,735	73,764
1891-92	477,623	113,750
1892-93	411,151	86,924
1893-94	274,279	56,811
1894-95	743,663	....

—*Oil Paint and Drug Report.*

AN IMPORTANT PEAT INDUSTY.

THE MOSS LITTER AND PEAT INDUTRIES: MR. W. LAING MALCOLMSON AGAIN TO THE FRONT.

The prospectus of this promising company has now been issued to the public. The capital is 225,000*l* in 1*l* shares. The vendors take 75,000 fully-paid shares in part payment of the purchase consideration, this, be it noted, being the largest amount they are allowed to take under the rules of the Stock Exchange. The balance—150,000—are now offered for subscription. This Company has been formed of the purpose of acquiring and dealing with peat deposits, works, machinery and plant; also the valuable patents and patent right (with all future improvements) for the treatment of peat and peat fibre, which are now the property of the Peat Industries Syndicate and of W. Laing Malcolmson, and for the purpose of establishing and developing these industries in England, Ireland, and Scotland. Forty-three patents have already been granted for the following countries:—Great Britain and Ireland, France, Germany, Belgium, Sweden and Norway, Denmark, Austro-Hungary, Russia, Spain, Italy, the United States of America, and Canada. The peat moors, 1,757 acres in extent, with the fully-equipped freehold moss-litter factory, are situate at Schoeningsdorf, near Meppen, Hanover, and the two fully-equipped factories for the treatment of fibre and agglomerated materials (the principal of which is freehold) at Maastricht, Holland, and the depôts at Lingen, Dedemswaart, and Paris. The prospectus would seem to indicate that the company has excellent prospects of making a very respectable profit out of the enterprise, and shareholders who now take the advantage of the present opportunity or taking up shares are not likely to regret it.—*Colonies and India.*

Mr. Chamberlain's Railway Policy.—In answer to our application to a good authority, we have the following satisfactory expression of opinion:—

"You ask me what I think will be Chamberlain's railway policy. I think that wherever it is shown that the safeguarding of the Empire or the extension of its Commerce needs the construction of a line of railway, Imperial assistance in so far as it depends on Mr. C. and his colleagues will be given, and given with a promptness and liberality to which up to date we have not been accustomed."—Reuter's report of Mr. Curzon's speech published in our Saturday's issue points emphatically in the same direction.

SUGAR PLANTING IN GUATEMALA.

A successful coffee planter of Guatemala, Mr. Leodore Engelhardt, has gone to Germany to purchase an outfit for a sugar house. To a representative of the New Orleans *Picayune* has said: "Guatemala is one of the best countries in the world for the cultivation of sugar cane. There is never any danger of freezes, and the cane grows very large. It is an ordinary thing to see a stalk 20 feet high, with the thickness of a man's arm. In addition to its bulk, the cane is exceedingly juicy. It is my intention to purchase machinery for a mill that will grind 1,500,000 pounds per annum. The cane grows down there with slight cultivation, labour is cheap and the market accessible on account of good railroad facilities."

Mr. Engelhardt also intends to cultivate Indian corn, as the supply of it in Guatemala does not equal the demand. The people have found coffee so profitable they have been contented to pay high prices for corn. One hundred pounds of corn, he says, is worth $6 in Guatemala money, which is about $3 in the currency of the United States. He believes that money can be made from the cultivation of the soil adapted to corn, and intends to send down about thirty Louisiana negroes to do the work in the fields. The natives are too lazy, and one good negro from the States does the work, without complaint, of more than half a dozen of the labourers of Guatemala. The soil produces three crops of corn in one year.

PLANTING IN SELANGOR.—THE RECENT LAND SALE.

This is for the eye of the new Resident-General of the Native States who will doubtless quite see the force of the plea that whatever be the fortunes of mining, planting is the industry which should receive every possible facility, encouragement, and actual assistance. A correspondent writes.—We have had a spell of fine planting weather, which has been taken advantage of. The land sale at Klang on Monday last was fairly attended, but prices would have been far lower all round but for the receipt of Mr. Forsythe's commission to buy, just at the last moment. The Selangor Government ought to employ half-a-dozen extra surveyors, if only temporarily, and after selecting an expanse of good land, have it all cut up in blocks ready for sale, so that newcomers might have a chance of getting what they want at once, without having to wait an indefinite period for the next sale. It is in matters of this sort that the Government policy errs on the side of economy, though any amount of money is always available for building, and so on. The extra premium resulting from competition at these sales is a mere fleabite, and if the Government were content to get settlers, looking to the future for their reward in the shape of a swelling revenue, instead of adopting their present skin flint policy of auctioning, say 3,000 acres when 5,000 or 6,000 would be taken up and opened if obtainable on easier terms, it would be far better for the country.—*S. F. Press.*

Cheap Transport and How to get it.—Mr. Davis-Allen favours us (see page 251) with another of his instructive papers, this time dealing with gauge in reference to curvature and gradient. It will well repay perusal. One question arises as to the advantage of the greater boiler-space available on a broad-gauge in climbing a heavy gradient. We travelled on the Queensland narrow-gauge in 1870 and our train—it did not seem a long one—had some difficulty in getting up the inclines: there were not a few unusual stoppages. But it is possible the engine was to blame. Great improvements in locomotives have been effected within the past 25 years. The Queensland narrow lines were designed by Mr. Fitzgibbon who was third on the original Ceylon Railway Staff in Sir Henry Ward's time, while we found the then Chief Engineer, Mr. W. T. Doyne, in 1870, busy engineering the first railway in Tasmania.

CHEAP TRANSPORT AND HOW TO GET IT.—NO 6.

CURVE AND GAUGE.

The destructive factors which come into operation during the movement of a train round a curve are: (1) the thrust of the leading outside wheel against the head of the rail due to the centrifugal swerve of the train; (2) the nip arising from the oblique position of the wheels relatively to the rails; (3) the sliding of the wheels owing to the outer rail being longer and the inner rail shorter than the centre line; (4) the crushing due to the load being thrown on to the inner rail by the elevation of the outer one. It is not to the credit of railway engineers that the manner and degree in which these factors are affected by gauge should be still debatable. The chaotic state of opinion and the lack of assured knowledge hereupon were aptly illustrated in the course of the controversies which arose over the Nawalapitiya extension: we continue to take our examples as far as possible from Ceylon. Writing under date November 11th 1874 Sir C. H. Gregory said "I do not consider that the existence of 5-chain curves, if unavoidable, would be a bar to the use of the gauge of 5′6″;" adding later, "to work properly on such curves special appliances would be required both in engines and rolling stock, such as shortening the wheel-base and the use of radial axles or bogies * * * these are no novelty, and the result of their use is an ascertained fact, and not a speculative question depending upon experiments to be made." But the local railway staff were of a different mind, and the Director of Public Works (Mr. J. R. Mosse), fearful lest the adoption of 5-chain curves should eventuate in break of gauge, and convinced of the possibility of securing at a slight additional cost a limiting radius of 6·37 chains, sent in to the Colonial Secretary an elaborate statement of his views on the subject, supporting them by quotations from a formidable array of authorities. Amongst them Sir Guildford Molesworth to whom he had submitted the following questions on the point in issue between himself and Sir C. H. Gregory:—"Have you practical experience on the State Railways in India of curves of 330 feet (= 5 chains) on a long gradient of about 1 in 44? Do you know of any means, by radial axle-box or the like, of adapting rolling stock on a gauge of 5′ 6″ to curves of 330′ radius?" To which Sir Guildford Molesworth replied:—"We have no practical experience of curves of 333 (*sic.*) on a long gradient and I sincerely hope we shall have none either on a gradient or otherwise* * * I know of no method by means of radial axle boxes which would lessen the friction so as to reconcile me to curves to any extent of 330′ radius." Nearly twenty-years have gone by, and thousands of miles of railway on all kinds of gauges to all kinds of curves have been built, since Messrs. Gregory and Molesworth thus darkened one another's counsel, yet there is well nigh as much room for dissidence now as then.

All we know assuredly is:—First, that the resistance due to curves is much greater than would appear from Morrison's stale formula, still given in Molesworth's "Pocket Book," according to which the measure of the resistance is the figure obtained by dividing the product of weight of vehicle, co-efficient of friction of wheel on rail, and gauge plus wheel-base by twice the radius of curve. Second, that with a wheel-base the same multiple of the gauge (and it should not be less than twice), the destructiveness of any given curve is less, the less the gauge. Hence it is that to accommodate broad gauge rolling stock to sharp curves, or (keeping to the particular) to enable 5′ 6″ wagons to run round 5-chain curves without absolutely ruinous wear and tear, the wheel-base must needs be contracted to the dimension appropriate to metre rolling stock, namely 7 feet or thereabouts. Even so, the wear and tear continues greater on the broader gauge by the amount due to the heavier axle-load, speed being the same. Off the curve the expedient is all to the bad, because vehicles whose wheel-base is much under twice the gauge have a tendency to travel askew and spread the track; they swerve now to this side, now to that, striking the rail laterally with a force proportioned to their momentum.

Let us get to figures. According to Mellen Wellington's calculations, the destructiveness of a 5-chain curve per ton of train weight would be 61 per cent less on a metre than on a 5′ 6″ gauge with a wheel-base in both cases approximately twice the gauge. And the same author's experiments on the New York Pennsylvania and Ohio railway gave the following noteworthy results: on two locomotive sections of equal mileage, with the same rolling-stock load, the one virtually straight, the other consisting for one-third its length of curves of 6·37 chains radius and for the remaining two-thirds virtually straight, the locomotive expenses alone during the trial year were 7 per cent greater on the curved than on the straight. The gauge was 4′8½.″ A similar series of experiments on the Ceylon 5′6″ track should show that locomotive expenses are at least 12 per cent higher on sharp curve sections than on straight; probably more, on account of the higher degree of friction which obtains in climates like that of Ceylon. The heavier wear and tear caused by curvature is, of course, not confined to the locomotive; it is felt in almost every item of operating expenses, notably in maintenance of the track. Locomotive expenses are singled out merely because the difference may be more readily and accurately measured. The third item of certainty in the matter of curve and gauge is that in broken country, the shorter the limiting radius of curve the less the cost of construction; and (repeating what we have already said) the narrower the gauge the less the danger and damage accruing from this source of economy. Lacking better argument, the narrow-gaugers on the occasion of a famous test run over the "seven foot way" from Didcot to Goring, privily abstracted the grease from Brunel's axle-boxes. Under a similar necessity the broad-gaugers, Messrs. Hawkshaw and Bidder for example, have denied both these propositions, or, to be quite accurate, they have belittled the saving to be effected by sharpening the characteristic curve, and have affirmed that where a little railway can go, there, *and with equal ease*, a big railway can go also. To such amazing statements were truthful church-going men driven a quarter of a century ago in their laudable endeavours to prevent break of gauge. Sir C. H. Gregory on the contrary (and these samples of the extent to which opinion takes the place of ascertained fact in railway practice cannot be too carefully pondered), Sir C. H. Gregory was so convinced of the saving which might be effected in hill country by shortening up the limiting radius of curve by even a chain that, advising on the Nawalapitiya extention, he wrote, "if a sacrifice of efficiency must be made in order to limit the cost of the extension, I have felt that the sacrifice of the curves was

the one which would probably produce the largest saving of cost with the least amount of injury" and accordingly he made the characteristic curve what it is beyond Nawalapitiya, one of 5-chains radius. That he was right we will not say, in advising 5-chain curves, but his view of the effect on cost of construction was amply proved by Mr. McNair's surveys and estimates, according to which on the line in question a difference of 1·37 chains in the limiting radius of curve made a difference of R10,000 a mile, the line being in every other respect the same.

Queensland supplies another example. The Ipswich-Toowoomba railway, 78 miles in length, was in the first instance, surveyed for a 4'·8½" track with a characteristic curve of 8·19 chains, the dimensions adopted in the older colony of New South Wales. The cost being found prohibitive, a new trace was surveyed for a 3'·6" railway of the same quality but with a minimum curve of 5-chains radius. This was built by Messrs. Peto, Brassey & Betts at a total cost of 34% less than the estimate for the wider line, while on the mountain section where the line crosses the Little Liverpool and Main ranges the saving was nearly 70%. The Little Liverpool range 700', and the Main range 1400, above the level of the surrounding district are cut up into long thin spurs with deep, narrow, steep-walled ravines intervening; perhaps as difficult a bit of country from an engineer's point of view as any in the world; the kind of country where a difference of a chain in radius of curve makes an enormous difference in cost of construction. In this case close surveys and estimates showed that in the item of viaducts alone a reduction from 8·19 to 5 chains would effect a reduction in cost of no less than £29,000 per mile on the 22-mile section (1865 prices).

Much of what has been said under the head of curve and gauge might with equal propriety have been said under the head of

ALIGNMENT AND GAUGE.

We have seen why and to what extent sharp curves are less injurious the narrower the track. With a grip on the practical corollary therefrom, namely that sharp curves may be more freely used in setting out a metre gauge railway than one of 5' 6", there should be no difficulty in apprehending the following crucial propositions. First, that except it may be in crossing a billiard table, the alignment to a broad gauge will rarely coincide with an alignment to a narrow gauge, the divergence being greater the more broken the country, the more closely it resembles the spur and gully type of formation. Second that a comparative estimate of the cost of a narrow gauge railway to the alignment of one of broad gauge is unfair and fallacious; and the more fallacious the more difficult the country to be traversed. A metre track should be allowed to pick its way, and to take full advantage of the greater facility with which it can mould itself to the natural contours of the surface, and thus elude the necessity for tunnels, cuttings, lofty embankments, and the long culverts which lofty embankments entail. To coerce a narrow gauge railway to the restricted alignment of one of wider type is to throw away a main source of its handiness and cheapness.

The fallacy should now be obvious which vitiates the cut-and-dry method employed in Westminster to calculate the saving in the item of earthworks resulting from a reduction of gauge: "subtract the cost of a parallelogram of the width of the difference of gauge and of the depth and height corresponding with that of the cuttings and embankments"—quietly assuming, the reader will note, that in country broken up into spurs and gullies and on prairie or veldt as smooth as your Sunday hat, the alignment of the two will be the same! Where an orographical survey is available sufficiently detailed to show the contour lines for every tenth foot of altitude, alignment and quantities for a narrow gauge line may be approximately worked out from the plans and estimates for a broad gauge; but where as in Ceylon no such datum exists an absolutely independent survey is indispensable. And the assumption that all gauges must travel from terminal to terminal by exactly the same route is misleading with respect not only to earthworks, but to such costly features as tunnels, viaducts, bridges and culverting also; how misleading may be inferred from the instance already cited of the viaducts on the Queensland Southern and Western Railway.

GRADIENT AND GAUGE.

Were railways straight and level throughout, locomotives might be smaller or trains much heavier, so little would be the tractive power required—say from 6 lbs. to 18 lbs. per ton of gross weight behind the engine, according to speed, climate, and conditions of road and rolling stock; with about thrice this power of pull for starting. But very few railways are level throughout; most have a very appreciable percentage of their length on the slope; the Indian metre lines, for instance, have about 20 per cent, say 400 miles, of their united length on gradients worse than 1 in 200. The worst gradient on a line determines the weight of its locomotives, and with it all those items of construction and maintenance which in their turn are ruled by the travelling load.

But the influence of gradients does not end here; it is felt in cost of haulage also. For a gradient adds to the work of hauling the train, the much harder and costlier work of lifting it, and this at a rate such that the vertical rise per cent of distance traversed, the gradient in plain phrase, expresses the percentage of the train-load added to the resistance of haulage on the level. Thus if the resistance to haulage on the level be 10 lb. per ton of train-load, a gradient of 1 per cent (= one foot of rise per 100 feet length of rail) would add 22·5 lb. per ton of train load to the work to be done by the locomotive; a gradient of 2 per cent (1 in 50) would add 45 lb.; one of 2·5 per cent (1 in 40) 56 lb.; and so on. Or take a locomotive whose weight is so distributed as to throw 18 tons of it on the coupled wheels. Then reckoning its tractive power at one-sixth the insistant weight, and the tractive power required per ton of train load on the level at 10 lb., such a locomotive should move 672 tons—on the level. But now see the reduction of haulage capacity when the train requires to be lifted as well as pulled: On a gradient of 1 per cent. the locomotive would be equal to a load of no more than about 260 tons; on one of 2 per cent. 120 tons; and on one of 2·5 per cent. 100 tons only. In view of these facts it should be easy to understand why where a heavy traffic is to be provided for, no outlay is begrudged to secure a level track, the saving in haulage and upkeep more than covering interest on the extra capital thus expended. Our concern, however, is with cases of light traffic, with cases, therefore where the limit set to capital expenditure by the prospective returns is soon reached. Here the prime consideration is a cheap line, and sharp curves

and steep gradients, *cum multis aliis*, are resorted to as making for cheapness. But these expedients (and the fact cannot be too clearly kept in mind), all entail some sacrifice of efficiency, some increase of operating expenses, and are justifiable only as the alternative to no railway at all—the predicament of most projects which hinge on traffic "in sight."

Of expedients for cheapening first cost, curvature, as we have seen, is less objectionable on narrow than on broad gauges. In the use of gradients, on the other hand, all gauges enjoy pretty much the same facility with the exception of those of less than one metre, which labour under the disadvantage explained in an earlier article. In all cases the train has to be lifted, and the extra work thus thrown on the locomotive is in no wise affected by the space between the wheels.

When however, gradients are complicated by curvature, and in hilly countries the one is seldom found without the other, then gauge begins to tell, and the metre and its congener the 3' 6" resume their superiority in this respect over the 4' 8½" and 5' 6". It is customary to represent the effect of curvature on gradient as the equivalent of an increase in the angle of inclination, according to a formula devised by the late Professor Rankine of Glasgow. But the formula does not square with the observed facts of experience, and it would be nearer the mark to represent the combination of curve and gradient as equivalent to a sharpening of the curve.

COOLY LABOUR IN S. INDIA AND THE SUPPLY FOR THE STRAITS.

EXTRACTS FROM REPORT ON A VISIT TO SOUTHERN INDIA.

By Mr. E. V. Carey, Chairman, Selangor Planters' Association.

As soon as I arrived at Negapatam I at once went to see Dr. Hardaker, who gave me application forms for four licenses (one for myself and three for my *Canganies*) and a letter to the Assistant Collector, a native gentleman, who after hearing what I had to say, sent me on to the Port Officer, it being apparently the custom that the latter official should signify his approval of the applicant before the licenses could be issued. Having survived this ordeal I obtained my licenses, free of cost, but before availing myself of the privileges which they conferred upon me, I had again to take them to be countersigned by the Port Officer and Emigration Agent. The time occupied by these proceedings was exactly five days, the previous record having been, I was told, a month, so I had every reason to consider myself extremely lucky; but I could not help thinking that the matter would be much simplified if licenses were issued direct on Dr. Hardaker's recommendation, which surely should be sufficient. There does not seem to be any other objection to the system of compulsory licensing, which to some extent prevents irregular recruting by persons whose representations, as a rule quite false, must in the end do considerable harm to the cause of emigration to this country.

During my stay in Negapatam, whilst waiting for my licenses, I took the oppotunity of sounding Messrs. Adamson, Mactaggart & Co. and Messrs. Ganapithay Pillai & Co., both of whom recruit indentured labour, with a view to ascertaining whether they would undertake the supply of free coolies also. The latter firm refused point blank on the ground that they were prevented by law and also that they could not work the two businesses harmoniously. Messrs. Adamson, Mactaggart & Co., however, acting upon my suggestion, addressed the Government upon the subject and endeavoured to find out what the legal position was, but up to the time of my departure they had received no reply; they, however, expressed their willingness to recruit for us no reasonable terms provided no legal difficulties existed.

After some trouble and a lengthy search through many Immigration and Emigration Acts and Ordinances, I unearthed a Madras General Order dated 15th May, 1888—a copy of which I have handed to the Honorary Secretary for information of members—which does not seem to have been repealed and which covers copy of a Circular addressed by the then Acting Indian Immigration Agent, Penang, to Estate Managers in the Colony and the Native States. This Circular, which purports to have the force of law, is worded as follows, and is dated Penang, 8th November, 1887:—"I am directed to inform you that the followidg rules are to be observed with reference to the recruiting of labour in India. (*a*) All recruiters arriving in India with a letter from the Indian Immigration Agent and those appointed by the agents of the planters there shall take out licences in India. (*b*) No agent or recruiter shall receive any commission on coolies not entered in the list of indentured coolies (From A).

"2. I will ask you to be good enough to communicate the above rules to your Agents in India—(Signed) H A Thompson, *Acting Indian Immigration Agent.*"

Commenting upon tho above rules the Madras Government, in the same Government Order, p. 9 para 5, has the following:—"The proposal that agents and recruiters shall not receive a commission for any emigrants not entered in Form A cannot of course be enforced by this Government."

The position, briefly summarised, is therefore this: the planter may go to India and recruit free coolies, he may send his native agent from here for the same purpose providing he pays him no commission; but he cannot employ even the most respectable and trustworthy agents at Negapatam to do the same thing because he is not allowed to pay such agents any commission, free coolies not being entitled to have their names entered in Register A, which is reserved for indentured labour only. This, I venture to think, is an exceedingly anomalous and untenable position, and I have no doubt that when it is pointed out to the Government exceptions will be made in the csse of firms and agents of standing and position. The fact of the Madras Government declining to enforce the Order referred to does not do away with the difficulty in Penang, which must clearly be set right, for such enormous and comprehensive powers are conferred upon the Immigration Agent there by Indian Immigration Ordinance, No. V. of 1884, that it is conceivable that coolies recruited on commission through Indian agents (the fact having become known to the Penang authorities) might not be allowed to proceed to their destinations in Selangor.

Leaving Negapatam I went for a 10-days' round of the recruiting grounds at which I hoped to collect coolies, visiting Madura, Chittambaram, Kumbokonam, Tirip.tooroo, Tullikapetty and other towns and villages. Wherever I went I found the coolies willing enough to listen to all I had to say and many of them to come with me, though somewhat sceptical as to the existence of such a place as Selangor, with its salubrious climate, high wages and already settled Tamil community.

I regret that I am unable to announce what the nett result of my trip was, as the *Canganies* I left behind have not come in yet; but I believe that I have secured 100 to 150 coolies, which was all that I wanted, and I am certain that had I been able to stay in India for two months or so myself I could have recruited 500 if I had been desirous of doing so. In one or two villages I found coolies who had been over to the Straits, but under indentures, and it was only when I explained that I proposed to enter into no contract with them, that I could in these cases obtain a hearing at all, the native recruiters who had got at them in the first instance having, according to their own accounts, misled them not a little.

To sum up, I attribute the poor influx of Tamil labour into this country to the following causes:—(1) Want of advertisement—the vast majority of the coolies I spoke to only knew the Straits by name as "Singapore" and had not heard of Selangor at all; (2) Tho heavy and steady drain upon the villages from the tea and coffee estates in India and emigration to other and better-known countries. In connection with which it may here be stated that the "congestion" cry appears to be much exaggerated; (3) The prevalence of the truck system, by which the labourer is practically kept always in debt to the "Jemindar" or headman, lessee of the land on which he lives, where he works, and from which he consequently often experiences great difficulty in getting away; (4) The system of recruiting as adopted by the agents of indentured immigration—*viz.*, R16 per head paid to native recruiters for every coolie brought to the depôt at Negapatam and passed by the Medical Officer. The recruits may not have had a rupee spent upon them, but the recruiter gets his money all the same, and these men are naturally strongly opposed to free labour operations where strict accounts of expenditure have to be kept. They are also practically the only recruiters the coolies in the villages have any experience of, and I should say the large majority of them are men who as long as they secure recruits, care little how they get them; and consequently command neither the respect nor the confidence of tho inhabitants.

Although I saw many gaudy posters in tho offices of the Negapatam houses which were supposed to be distributed as labour advertisements through the villages, I never came across one of them there myself, nor did I meet a single coolie who had seen one

Indentured Immigration.—So much has been said of the unsuitability and poor physique of the coolies sent over through the agency of Messrs. Adamson, Mactaggart & Co., and other firms in Negapatam and elsewhere, that I took the opportunity of visiting the depôt, which is situated in a rather out-of-the-way quarter of Negapatam, whilst several batches of these coolies were being examined by the Medical Officer prior to despatch to the Straits. The depôt was a large airy building kept scrupulously clean, and the accepted recruits were as fine looking a lot of men and women as one could wish to see—indeed, Dr. Hardaker turned away several as unsuitable whom as far as physique went I would have been uncommonly glad of myself,—on the ground that their hands were not hardened by manual labour, or that they belonged to other than an agricultural caste. Each man was made to use the mammotty or changkol in the presence of Dr. Hardaker until the sweat ran off his back, in order that his knowledge of the use of this instrument, which is more commonly used than any other for digging purposes, might be thoroughly tested. I also learnt that, in the case of Messrs. Adamson, Mactaggart & Co., a member of that firm almost invariably inspected their new recruits, after his Government examination, in order that there might be no doubt as to their fitness for exportation as agricultural labourers. I went over to India prepared to find the whole system of indentured immigration rotten, as I believed it, and as I know numbers of planters believe it, to be. But I soon saw for myself that it had a great deal to recommend it and that in many respects it was excellently worked, especially in every particular connected with the depot at Nagapatam. It is the more to be regretted therefore that the many drawbacks which tho system possesses, and which I do not propose to touch upon now, render it so unacceptable to planters who have been accustomed to free labour, that they do not care to avail themselves of its provisions and assistance.

The solution to the whole labour difficulty is to devise some means by which a sufficiency of labour may be attracted to tho country, and not to compete for what we already have.

General.—I strongly recommend that the Association should have a native agent travelling by every steamer to and from Negapatam to look after and assist all coolies whose passages have been paid for them by our Negapatam agents, and who unless in charge of some responsible and recognised guide, might easily get adrift in Penang.—E. V. CAREY.

New Amherst Estate, 27th July, 1895.

AN IDEA FOR CAPITALISTS.

Mr. Gambier Bolton, F.Z.S., who ought to know, says that there is money in wild-beast raising. He says that an extremely large business is only waiting to be worked up in this line. Its aim would be to supply specimens to the ever-increasing number of private and public collections. A piece of land on the south coast, well sheltered from north and east winds, and with a sandy soil, is recommended by Mr. Bolton as the most suitable site for this novel farm. How to stock it! "A small expedition, already seriously talked about, would produce the African mammals, such as lions, zebras, hippopotamus, the rarer antelopes, and eventually giraffes and elephants; while a skilled buyer sent to Singapore could obtain tigers, Malayan tapirs, and other Asiatic mammals; and bison, wapti, and pronghorn antelopes can still be purchased in Canada and America." Mr. Bolton has no fears of the result of a well-managed enterprise on these lines.—*New Budget*, Aug. 15.

LIBERIAN COFFEE IN WYNAAD.

To Editor, M. Mail.

Sir,—Your issue of the 22nd instant contains a letter on Liberian coffee, written by Mr. H. B. Winterbotham, of Vayitri, to the Agri-Horticultural Society, Madras. As this gentleman has, I believe, a longer experience of Liberian coffee in Wynaad than any other planter, his opinions are valuable and should carry weight; but, in the course of the above letter, he makes two statements to which exception must be taken. He says:—"The Liberian we find will grow from 500 feet to 3,000 feet." Again:—"It seems to bear very satisfactorily from 2,000 feet to 2,500 feet." This would mean, by implication, that 3,000 feet is the highest elevation at which the cultivation of Liberian coffee could be successfully undertaken in Wynaad. This is a mistake; for in Nellacotta (S.E. Wynaad) we have very fine specimens which yield large crops, at an elevation of some 5,000 feet. I have some 60 trees, two of which were planted, as far as I can learn, about 18 years ago. These later are 30 feet in height, and bear heavily every year. They are now covered with immature fruit, the April blossom having been a fine one. The other trees, planted many years later, are from 12 to 15 feet in height, and also bear well. Avondale Estate contains two fine Liberian trees; while on Devera Shola Estate there are quite a number, 300 perhaps at a rough guess, all of which crop heavily. No Nellakotta planter has gone in for Liberian on anything like a large scale; but from the specimens extant it is quite evident that this species of coffee would do well. The limit of its successful cultivation can therefore be safely increased in Wynaad to 5,000 feet.

Mr. Winterbotham says:—"The sample of this giant kind . . . . has lately been valued at 85s. to 90s. in London, or say 10s. per cwt. less than 'Arabica.'" The proof of the pudding is in the eating, and Messrs. Patry and Pasteur's Market Report for the week ending the 24th July contains the sale price at auction of a consignment of Wynaad Liberian (from S. Wynaad I take it, and the first consignment I think ever sent Home), "3 bags Wynaad Liberian" are there stated to have realised 74s per cwt., "3 bags Travancore Liberian" brought 1 6 per cwt. less; and I greatly doubt whether it would be safe ever to reckon on higher prices than these. 78 bags Johore Liberian fetched the high price of 86s 6d per cwt. It would be interesting to know the reason for this large difference. Probably the latter is a better variety with a finer bean. Toda.

ART EXPORTS.

If we examine the returns of nearly every Eastern country we shall see the large proportion that art productions bear to the general volume of exports. Japan probably takes the lead in this respect, and China makes a very respectable second, while many other countries at least make a respectable show. But Ceylon is almost entirely outside the category of art-exporting countries. India makes a show with the products of her looms, with her Benares and Delhi work, and with the large quantity of carved furniture produced in the Bombay Presidency. Why should Ceylon form such a notable exception in this respect? For it is undoubted that among the Kandyans, at all events, the faculty if not the genius for art is original. The taste shown in the designs of many Kandyan buildings of a former age, and in connection with certain work in metals, evidence the originality of this possession. Those designs have no parallel in any other country. They are unique. Anyone can recognise their features. Side by side with the work of India, Burma, Siam, or China, the trained eye immediately and without difficulty separates the work of the ancient Kandyan architect. It has a distinct and early recognisable style that is by no means deficient in attractive features and particularity. It is safe, therefore, to say that we have an original school of art among us, and the question thereupon follows why it remains so undeveloped and so unappreciated that its results bear no place in our export list? We have heard it argued that there is no appreciation of Kandyan productions in European countries, that they are not suited to the taste cultivated therein. But Japanese art is at least as eccentric as or even more so than, that of Ceylon, and yet the demand for its productions in Europe, far from waning, seems to increase day by day. Experts tell us that it is colouring that determines appreciation by European taste, and that the Japanese excel in this. Well, it must be admitted, we think, that Kandyan taste, with its affection for bright yellows and the sharp contrast that the use of these enforce, are scarcely consonant with the canons of European taste. If this be so, it seems a pity that failure to please in one department of art should exclude our native productions from appreciation by outsiders. Does it of necessity follow that because crudity in colour has existed through many ages that it must necessarily continue to deface native art? That crudity is at least peculiar and distinctive; but if it does not please, might not innovation upon it be allowed without carrying the stigma of Philistinism? Who, in Ceylon, is competent to advise and aid to some useful result.

CEYLON AND OTHER TEAS IN AUSTRALIA.

(From *Alfred Harvey & Co.'s Monthly Tea Report.*)

MELBOURNE, Aug. 29.

GENERAL.—The second series of sales of Foochow teas was held on the 14th, when equal to 21,000 half-chests were offered, of which 17,500 found buyers, the withdrawals, as in the first series, being almost confined to low grade common congou. During the interval between the first and second sales, almost all held over from the first sales have found buyers at prices then demanded. The selecton in the second cargo was, though limited, mainly good useful Panyong kinds, and for these the biddings were spirited throughout at 5 per cent. advance upon opening sales.

Some small sales of Indians ex "Bucephalus" were held on the 23rd, at which there was no change in value, and biddings were dull. Much larger printings will claim attention today—some 4,600 chests. The bulk shows no improvement in quality, and there is an increasing number of poor Kangra Valley and kindred growths boldly marked Darjeeling. It is almost a pity some of the more venturesome shippers do not send these *via* Colombo, marked with some crack Ceylon garden, and so avoid injuring the good name of one of their best districts.

Ceylon teas continue in very limited supply, and in consequence there has been a gradual firmness in all grades, with a substantial advance in good quality, especially fine and finest. Both the Foochow and Colombo markets are well above local values, and Calcutta remains without change. Stocks in bond on the 10th were 2,589,946 lb., against 3,576,816 lb. at same time last year.

CEYLON.—Shipments are 3,331,000 lb., against 2,200,000 lb. at the same time last year; or an increase of over 1,000 000 lb. in less than three months. Consumption is evidently much larger, as there is little or no stock on this market, and latter arrivals having been small, prices advanced for all kinds, more especially for hill-grown, fine quality showing 1d to 1½d advance. Prices paid were:—For dust, 5¼d to 5¾d; bold red leaf, 5½d to 5¾d; good leaf pekoe souchongs, 6¼d to 7½d; pekoes, 6½d to 8d; broken and orange pekoes, 7¾d to 11½d for choice. Stocks in bond on the 10th were 369,625 lb.

PLANTING AND PRODUCE.

TOO MUCH VIRTUE IN TEA LEAVES.—We had occasion last week to refer to the hostility to tea shown by some medical men. We can now give an instance where too much virtue was ascribed to the leaf. A chemist's assistant named Perdue recently appeared before the coroner for East London in connection with the death of a child. Perdue, in the course of the evidence he gave, said: "I have attended the sick, the dying, and bereaved in various parts of London." "Then the sooner you give it up the better for your patients and the safer for yourself," remarked the coroner encouragingly. "I am fully aware of it," continued to the unabashed chemist's assistant, "but I never charge anything from anybody, and its wonderful what I can do with my skill." "What can you do?" asked Mr. Baxter. "I can make anything out of tea leaves," answered the witness; "it's really wonderful what you can do with them if you only try." "But that does not give you the right to act as a doctor," suggested the coroner. "I live only to do good to others," replied Perdue, "and if I do wrong I will stand the risk." "Do you make your medicine of tea leaves?" queried Mr. Baxter. The young man, whom the coroner called foolish because of his answers, denied the impeachment, but those who smelled a bottle produced declared that the decoction smelled strongly of the fragrant plant. According to the testimony of a duly qualified doctor, the stuff Perdue had prescribed was harmless, and the child's death really resulted from bronchitis.

A TEA LEAF ADEPT.—Interviewed by a Press representative, Mr. Perdue revealed some further secrets in connection with his use of tea-leaves. The reporter found Mr. Perdue hard at work with his hands buried deep in a brown treacley compound, which proved to be his own new and original preparation for the cure of gout. Leaving his bowl of ointment, he led the way to his tea-leaf repository at the back of his premises. There, according to his own sweet will, he either turns the tea-leaf into boot blacking or ink. For the manufacture of the former the leaves are put through a drug press, then through various degrees of oxidation, and finally mixed with sugar, vaseline, and oils. The result is a solid compound, which is cut up into halfpenny cakes, not unlike burnt coffee, and solid as blacking. The ink is made by a different process, but this Mr. Perdue keeps hermetically sealed in his bosom. Whatever may

be his true title to fame he has certainly an inventive turn of mind, and has succeeded in getting himself his ideas, and his wares much talked about in the locality.

A NEW TEA COMPANY.—Under the title of the Tingri Tea Company, Limited, a company has been registered by Collyer, Bristow & Co., 4, Bedford Row, W.C., with a capital of £60,070 in 10 shares. Object, to acquire the business of tea, coffee, and cinchona planters and cultivators, as hitherto carried on by the Tingri Tea Company, Limited, in the province of Assam, in accordance with an agreement expressed to be made between the said Tingri Tea Company, Limited, and G. G. Anderson (the liquidator thereof) of the one part and W. Groundwater, on behalf of this company, of the other part, and to carry on and extend the same.—*H. and C. Mail*

CAMPHOR IN FORMOSA.

CAMPHOR.—The actual quantity of this valuable product shipped from Tamsui was larger in 1894 than in 1893 by about 1,000 cwt., but the average price obtained in Hong Kong was less per picul of 133⅓ lb. by 1·60 Haikwan tael for the same period. This and exchange account for the fall in total value from £16,836 to £90,149. There were unusual fluctuations of price during the year. The quotations in Hong Kong during the June quarter touched a lower level than for many years previously, while for the latter six months of the year prices recovered themselves partly owing to the disturbed state of the producing districts which threatened the supply, and partly in consequence of the war and an anticipated blockade.—*Consular Report for 1894.*

OOLONG TEA IN FORMOSA.

Oolong Tea is both the cause and the condition of the commercial prosperity, not only of North Formosa, but in great measure of the neighbouring mainland port of Amoy. And whereas not many years ago Tamsui might have been regarded almost as a dependency of the former port, it is a question whether the relative position would not soon be reversed were the normal political status of Formosa to remain unchanged. The total export for the year under review was very nearly 18,300,000 lb., valued at £480,566, against 20,017,000 lb., valued at £730,590 in 1893. In mere bulk this is a falling off of some 1,700,000 lb. Nevertheless the true Formosa crop was probably larger than in 1893, and the smaller figures are due to a satisfactory cause, the decrease, namely, in the import of inferior teas from the mainland for mixing with the island-grown leaf. As much as 60,000 half-chests, or 2,580,000 lb., it is estimated (though this may perhaps be too high) should be deducted from the export of 1893 on this account. The firm stand made in 1894 by the foreign buyers in declining to accept teas containing more than a certain percentage of dust had a good effect. The great feature of the tea season of the year under review was the settlement of nearly half the entire crop in Tamsui itself. Such a proportion has never been achieved before. The figures are for 1894, purchased in Tamsui 205,000 half-chests: in Amoy, 220,000.* For the previous year the totals were, bought in Tamsui, 160,000; in Amoy, 305,000 half-chests. The standard of the crop, taken all round, was decidedly satisfactory, and showed more careful preparation by the Chinese than the crop of 1893. The autumn pickings were much better than any autumn teas for some seasons. Dollar prices were naturally high, owing to low exchange, and the country growers made money. So also did the native packers. And I may add that it is understood that the foreign firms engaged in this branch of commerce have no reason to be dissatisfied. Many native tea buyers closed their hongs and returned to the mainland when the war with Japan commenced, a step which made matters considerably easier for the foreigners who remained and did business. The export of *Pouchong Tea* for Chinese, in the buying of which only native firms take part, increased by about 478,000lb.—*Consular Report for 1894.*

* Other figures which I have seen show an even closer approach to absolute equality.

TOBACCO IN FIJI.

Mr. Sutherland, the local manager of the Nadroga Tobacco Company, has been in town for the last day or two. He reports having harvested twenty acres of tobacco, which is now in the drying houses. Some 60 acres more are also in a forward state, and will soon be ready for cutting. The growth of the tobacco, we are glad to learn, is quite up to expectations, and leaves little to be desired with respect thereto.—*Fiji Times*, July 31.

TEA AND TARIFFS IN PERSIA.

Some light is thrown on the revolution in the tea trade which has recently occurred in Persia by the following extracts from the report for the financial year 1894 95 on the trade of Khorassan by Consul Ringler Thomson:—

The customs regulations as they affect British trade are as follows:—Persian and Afghan goods are charged a duty of 5 per cent. *ad valorem.* The importation of European and Anglo-Indian goods is forbidden, except pepper, ginger, and some other drugs (3 gold r per poad, 36lb): black tea (25 paper r per poud); green tea (14r 40c, paper, and 6r, paper, per poud, according to quality). Green teas destined for Transcaspia and Bokhara may be sent in transit by Batoum, Baku, or Ozanada, either to Ashkabad or to Bokhara, where the above duty must be paid. Now it is this last apparently simple clause which is to cause a revolution in trade here. In the first place, the natives of Russian Central Asia drink none but green tea, and up till now all of it has passed through either Afghanistan or Persia. But the dues in Afghanistan being very heavy, and the country sometimes disturbed, that route is not popular, and the great bulk of the green tea (either Chinese or Indian) has been brought from Bombay *via* Bundar Abbas to Meshed, and then sent on to Russian territory. In Persia, if the tea belongs to a British or Russian subject, only 5 per cent. *ad valorem* is paid on it; and, until the new regulations were introduced, 2½ per cent only was paid on the Russian frontier, and 2½ per cent more if it was despatched to Bokhara. Then if it entered Turkistan 11r per poud was levied on it. If the tea is the property of a Persian subject, the duty is nearly 10 per cent in Persia. The Chinese green tea is superior to the Indian, and costs about double as much, and therefore little or none of the Indian green tea entered Turkistan. But under the new regulations, the tea is to be taxed 5 to 10 per cent in Persia, and 6r or 11r 40c (paper), according to quality, on the Russian frontier, and nothing in Turkistan. In other words, the tea for Transcaspia and Bokhara, which comes by this route, is to be taxed something like 50 per cent. The Russians, however, have hit upon a very clever plan, whereby the whole of the duty hitherto paid in Persia, say at least £3,000, will be swept into their pockets, after being multiplied by about ten (of course much depends upon exchange), and yet the price of Indian green tea in Transcaspia and Bokhara (where it is drunk) will only be very slightly raised. The Chinese green tea will become, it is true, nearly 50 per cent dearer in Bokhara; but in Turkistan it will become considerably cheaper, and the Indian green tea so much cheaper that now it will probably find a sale in Turkistan.

HOW IT IS WORKED.

It has been managed in this way: Up till January last, all tea, black or green, arriving at Black Sea ports, paid a duty of 21r (gold) per poud (36 lb). The gold rouble is an imaginary piece of money. The only gold coins in Russia are half imperials, and these are equal to 5r (gold) each. At the present moment £1 sterling is worth about 9r 30 (paper),

and a gold rouble is worth about 1½ (paper). A paper rouble should be of the same value as a gold rouble, but such has not been the case since the Crimean war; and its value at one time was only half that of the gold rouble. Thus black and green teas arriving at Black Sea ports paid 21r (gold), or about 32r (paper) duty per poud. But now a concession has been made in favour of green tea, under which it may pass, in transit, through Batoum for Central Asia on payment of a duty of only 6r or 14r 40c (paper) per poud, according to quality. This great reduction in duty cannot fail to cause that route to be adopted in preference to the route through Persia for several reasons.

Firstly, the Russians have carefully worked it out, and reckon that the expenses by way of Batoum will save about 3r 12c per poud. If, then, we suppose 1 lb. of Indian green tea to cost 8a in Bombay, and 1 lb. of Chinese 1 rupee, we get the following result; but three factors must be kept in mind: 1. Exchange has been calculated at 1 rouble equals 6 krans equals 2 rupees, and it is sure to alter considerably. 2. The rate of transport through Persia to Bokhara (including the old rate of 10 per cent. duty) has been calculated at 4a per lb; that is the rate when forage is cheap and carriage easily procurable, but otherwise it would be much dearer. 3. The Russian estimate may be wrong, so that these statistics must be taken for what they are worth. This would make the Indian green tea 8c per 1 lb dearer when brought by Batoum than it was before January when brought via Persia, but the Russians reckon it will only be perhaps 2c dearer. Secondly, by the route through Persia the tea takes at least three months to reach Bokhara from Bombay, and often six, because transport is not always procurable, especially when forage is scarce, or wells dry up, or an arctic winter prevails. On the other hand, a merchant steamer travels from Bombay to Batoum in twenty-two days, and the remainder of the journey can be performed by a traveller in six days. Goods, of course, would take longer, but they should not take longer than forty days in all. Green tea is all that may pass, in transit, at these rates *via* Batoum for Central Asia; but it is expected that the route will be adopted now for other goods, such as indigo and muslin. Indeed, a large quantity of the former article has recently been despatched that way. And there is no doubt the regulations will be modified hereafter, if necessary, so as to draw trade by the new route. Meantime the merchants here are very angry and profess to be very suspicious about it, and it is quite possible that some little time may elapse before it becomes really popular.

THE RUSSIANS INSIST ON THE BATOUM ROUTE.

The Russians themselves do not expect great results all at once, if only because there is enough tea now in Bokhara to supply Central Asia for two years. The people here say the tea will be spoilt by the long sea route. This old fallacy is exploded even in Russia. Tea properly packed in lead-lined cases cannot be affected by a sea journey of three weeks in a well-founded modern steamer. Moreover, the Chinese tea has, in any case, to undergo the sea voyage from China to Bombay, and by the Persian route from Bombay has another sea journey of ten days. Tea gets more shaken several hours daily upon the back of a pack-animal than in the hold of a vessel, and the case which contains it is liable to more damage in the constant loading and unloading it undergoes. Moreover, in the former case it is likely often to be exposed to heavy rain for hours together, and sometimes to be immersed in water while the animals are wading through rivers. This happened recently to a couple of cases of tea which were brought here through Afghanistan.—The merchants say, too, that the tea will be impregnated with naphtha passing through Baku, &c. They also declare that numerous vexatious restrictions exist in Russia which neutralise the other benefits. There may be some truth in this, but one point they brought forward was found to be exaggerated. They stated that a deposit equal to three times the value of the tea is demanded at Batoum, and not refunded for three months. This is what really happens: On arrival at Batoum the tea is sealed and despatched to Baku, where it is examined, and a deposit taken equal to the customs duty which will eventually be paid on it at Askhabad or Bokhara. Then it is shipped to Ozanada (across the Caspian) where the weight is checked. After this, if the owner wishes again to send on the tea, in sealed waggons, the customs agent at Ozanada at once gives him an order for the refund of the deposit at Baku, and the tea is sent on to Askhabad or Bokhara, where the duty must be paid. If, however, the owner wishes to send on the tea unsealed from Ozanada the deposit is not refunded until information is received that the duty has been paid on the tea at its destination. The Bokharan merchants, who have no agents at Baku, may pay the duty at Bokhara, and it is now being arranged that no deposit at all will be required, and that the duty will simply be taken at Askhabad or Bokhara. Several points in the regulations are necessarily only tentative. The Russians mean that the Batoum route shall be adopted, and they are likely to have their way. Meantime, as abovestated because Bokhara is now overstocked, they expect very little green tea at Batoum for a year or two. But the merchants who hurried their teas across the frontier to evade the new rules have been in a measure checkmated, for the inner customs cordon at Samarkand and elsewhere is not to be withdrawn at any rate until July 1st to 13th next. Curious to relate, green tea has, since the new tariff came into force, been arriving at Meshed in just the same quantities as formerly, and it is being sent across the frontier and paying the new duty. Of course, this tea was ordered six or nine months ago, but it is quite possible that green tea will continue to arrive here for some little time to come. Orientals are very conservative, and especially suspicious of novel methods, but once convinced where their pockets are affected they soon adopt them. The man who introduced sewing-machines into Persia was ruined because no one would have anything to do with them for a long time. Now they are as much in use in the towns as in India.

THE EFFECT OF THE NEW REGULATIONS.

The new regulations, then, are causing this revolution in trade here. European and Indian articles are rigidly excluded from Russian Central Asia, except necessaries, such as tea, indigo, muslin, pepper, and spices, which Russia cannot herself supply, and these, too, are, as we think, pretty heavily taxed. But we must remember that the new customs system will cost a great deal to maintain, and that in Russia proper all foreign goods are heavily taxed. Indeed, the taxation on this frontier is light compared with it and the 6r taxation on Indian tea is a distinct concession to England. Had 14r. 40c been charged on all green tea the people would have been compelled to drink nothing but Chinese tea. Of course, the Bokharans who had been drinking Indian tea would then have had to pay double or treble (for a better quality, however), and there would have been some discontent, but still it could have been done. In Russia a peasant has to pay 2s 6d per lb. for the worst tea (the duty is 21 gold r, equals at present 32 paper r per poud; a poud is equal to 36 English or 40 Russian lb.) The tea drunk by the middle and upper classes costs from 7s to 11s per lb. In Central Asia Indian green tea will hardly cost 1s per lb.

Black tea can now pay 25 paper r on this frontier, or 21 gold r (*i.e.*, about 32 paper) at Batoum. It remains to be seen which route will prevail. Probably the black tea will still continue to come this way, because in Persia the people drink black and not green tea. Therefore, the tea can be brought for sale either here or across the frontier. But the amount of black tea which goes to Russian Central Asia is small. It is only the Persians there, and a few Russians (including soldiers), who use about £10,000 worth per annum. For some reason only about half that quantity crossed the frontier last year. The traders do not seem to have thought it worth while to get black tea across before the introduction of the new regulations, or they were too much occupied

with the green. The fact is, the pure Russian ahed not much taste for Indian tea (or what is called Indian tea, for it is said that in Moscow much Indian tea is sold as Chinese). Now, this is not all prejudice, for there is a difference between the Chinese tea the Russians drink and Indian tea; and, whether it comes from the soil or the method of drying and preparing the leaf, it is easily distinguishable. Good Indian tea has more flavour and fragrance, perhaps, but the tea in Russia seems to be softer to the taste and more delicate and less bitter. How is it that the tea one gets in even Russia, at a railway station, is always good? That tea is left simmering on the samovar sometimes for hours, but if a small quantity be poured into a glass, and the glass filled up with boiling water, tho decoction is always drinkable. Indian tea is stronger, and the English people prefer strong tea, but that does not explain all. There is no doubt that a very large quantity of cheap bad tea comes from the Indian markets. All of that brought to Meshed is of the vilest description, and is probably damaged stuff which has been subjected to firing a second time. Russians themselves say our process of drying is to blame, and that if our tea were subjected to the same process as in China they would gladly buy it. The Indian Tea Association, London, state that in 1881 the average price of tea in the London market was 1s 5d; now it is 9½d (and this includes 4d duty), and the Indian has driven the Chinese tea out. In 1881 Great Britain, they say, consumed 112,000,000lb. of Chinese tea, and 48,000,000lb of Indian and Ceylon tea. In 1893 the consumption was 36,000,000lb Chinese and 172,000,000lb. Indian and Ceylon. They further say that it only takes a nation ten years to get rid of its taste for bad teas, and to acquire a preference for good ones. Also that "China has not a chance against India and Ceylon. Her rule-of-thumb methods produced an article inferior in flavour and in high-class strength to that which the scientific appliances, tho costly machinery, and the chemistry of arrested fermentation enable the British tea planter to send to the market." This may, and ought to be, all true, and there is no doubt that India can and does, turn out as good and perhaps better toa than the best from China. But she also apparently sends out a quantity of very cheap bad stuff, and the fact remains that an Englishman can always drink what is called Russian tea, but a Russian often cannot drink Indian tea. —*H. & C. Mail.*

SIR W. MACGREGOR IN NEW GUINEA.

Still energetic, our old Colonial Secretary, Sir W. M'Gregor, is evidently intent upon developing his possession, as the following late telegram testifies:—"Mr. J. Fitzgerald, a Tasmanian miner and botanist, has been engaged by the Governor of New Guinea to explore the interior of that island for natural history specimens. Mr. Fitzgerald is highly recommended by Baron von Mueller.—*Fiji Times*, July 31.

TEA SHIPMENTS FROM SHANGHAI.

Tea.—The following notes on the tea market of last year have been supplied to me by a gentleman intimately acquainted with the trade. The Chinese have made fair profits this season all round. These profits encouraged free production of the leaf, and although the first crop showed a falling-off in quantity of 90,000 half-chests, or 12 per cent, the total season's yield amounted to 5 per cent. more than the previous season's total (say 45,000 half-chests excess). This quantity has proved rather more than was wanted, but notwithstanding this fact, tho season's results have proved decidedly satisfactory to foreign buyers. Fine teas (especially Keemuns, owing to their comparative scarcity and low sterling cost, and to the fact that fine Indian and Ceylon tea was likewise in short supply, paid handsomely in England, profits of 25 and 40 per cent being quite common; the lower grades, however, on the average did little better than cover cost or pay commissions. The good average result of the season's operations is however, no indication of any revival of the China black tea trade with England, which continues is shrink rapidly. The export of Congou from North China to England this season was only 16,250,000 lb. or nearly 4,000,000 lb. less than last season, and this is more than is wanted. There is no abatement in the speed at which British grown tea is ousting its heavily taxed rival in the London market.—*Consular Report for 1894.*

PRACTICAL NOTES FROM UVA.

(*By an old Northern Districts Planter.*)

The subject of a sufficient supply of

FIREWOOD

for tea furnaces is a most important one, and I thought over it for some time past.

BLUE GUM TREES.

Some years ago I planted some 18 bluo gum seeds in ordinary patana land close to my present abode, scarcely thinking they would grow well, the spot where I planted these seeds being much exposed to bleak and cutting winds. Nevertheless, these blue gum trees grew up fairly well, and some of them are from 30 to 40 feet high. Some months ago I felled 3 or 4 of the best of them and was quite surprised to find how solid the timber was, and what excellent fuel it gave.

I am quite sanguine that both blue and red gums will thrive on most ordinary patana lands, and if so, the fuel question will partly be solved to the great comfort of most tea planters. Let some planters try how these Australian weird-looking trees will grow on abandoned coffee estates. This is an important matter, and the experiment is well worth trying. No doubt some ordinary jungle trees would grow well if transplanted when young and large holes cut even in the patanas all about here and elsewhere too. This subject leads me naturally to say a few words about

WIND-BELTS.

Old coffeo planters like myself know right well that many ancient coffee estates were much impaired by cutting the outside jungle of their estates, and letting in violent gusts of wind that comes at certain times of the year. I myself did so, I am sorry to have to confess, and a near neighbour of mine almost ruined his totum by felling a long strip of jungle that kept out the winds of the N.-E. monsoon. Now, in these days wind-belts prevent such mistakes from playing havoc with

A WIND-BLOWN ESTATE,

and there are many tea estates that are much freer from wind and storms now, than they were when coffee estates thrived, owing to the judicious planting of wind-belts. Then, again, how well most tea estates are drained. There is little loss from

WASTE MOULD

being carried away when in heavy rain and storms now-a-days. So much for modern cultivation of tropical tea estates. This part of the island is rather celebrated, you know, for its extensive cultivation of

INDIAN CORN.

For many years when I lived on the Kandy side of Ceylon, I never saw such a lot of Indian corn, and I well remember Hamilton, the farrier &c., of Kandy town, first called my attention to the

MAIZE

grown in Uva Province, asking me, a Western tropical if it was wholesome feeding for horses and that he had just got in 200 bushels at R1 per bushel. Well just now it is selling at R1·50 to R1·75, while the price of paddy is R1·25 at Koslanda bazaar, I am told, and in the villages. By the bye, I hear many of the boutique-keepers are down with

FEVER,

and if I were to tell the readers of the *Observer* the number of fever cases treated monthly at the Dispensary they would hardly credit it! OLD HAND.

VARIOUS PLANTIG NOTES.

The "Agricultural Gazette" of New South Wales, Vol. VI. Part 7 for July 1895, has for Contents:—The Bathurst Burr, (*Xanthium spinosum*, Linn). J H Maiden. Australian Sandarach—J H Maiden. Economic Etomology—A S Olliff. The Honey Bee (Part III)—R Helm. Fruit from the Orchard to the Buyer—L G Corrie. Rotation of Crops—J L Thompson. Fluke and Liver Rot in Sheep—A Bruce. Analyses of Commercial Fertilizers—F B Guthrie. Practical Vegetable and Flower Growing—Directions for the mouth of August. Orchard Notes for August—General Notes. Agricultural Societies' Shows, 1895-6.

Ceylon Tea in London.—Pekoe Souchong the Same as Last Week and the Average ½d. Up.—Our Special Telegram from Messrs. Gow, Wilson & Stanton reports that the market generally is very firm, and good liquoring Pekoes are dearer, while the market for poor liquoring teas is very firm. The price of fair liquoring Pekoe Souchong is 7d and the average 8¾d. Reuter reports:—"Tone of Ceylon Tea: Very firm; fine qualities ½d higher, common qualities ¼d higher." Fair Pekoe Souchong he quotes at 6½d and the average at 8¾d, both shows an advance of ¼d. 15,000 packages of Ceylon Tea were offered for sale, of which 14,000 were sold.

Poisoned by Cocaine.—"Death from misadventure" was the verdict returned, on August 11, upon the body of William Patefield, aged 22, a solicitor of Bradford, who died on the platform at the Leeds Midland Station. He had been in the habit of taking cocaine hypodermically, and before starting for London he went to the lavatory, drank a quantity of the drug mixed with water, returned to the platform, fell, and expired. The deceased's arms, forearms, and thighs were covered with marks such as would be caused by a hypodermic needle, and a quantity of cocaine was found in the stomach. Dr. Roberts, of the Leeds Infirmary, said in small doses the drug was a stimulant, and in large doses it produced a kind of intoxication. Eight or ten grains would be fatal, and it would be easy for a person to administer to himself an overdose.—*Pharmaceutical Journal.*

Java Coffee.—The British Consul of Batavia reports that the cultivation of the Liberian bean, both in Mid and West Java, is rapidly increasing, and the satisfactory results obtained from its introduction become year by year more apparent as the principal difficulties attending the preparation of this coffee for the market are gradually being successfully surmounted. As a result a marked improvement in the appearance and quality of coffee is noted, and its flavor is becoming more and moro assured. The continued recurrence of the so-called "leaf" disease in the Java coffee on low-lying lands, from which the Liberia still preserves comparative—have been imported and laid under the streets, distributing though by no means entire—immunity, causes more confidence to be felt in the latter, and many lands which havo suffered most severely from tho ravages of this disease in the Arabian plant aro being re-planted with Liberian.—*Am. Grocer.*

The Influence of Trees.—As far as influence upon neighbouring crops is concerned, trees exert a deleterious influence upon the immediately adjoining portions of either by their shade—and somo species are shadier than others, hence a difference in degree of effect—or by their competition for moisture. Some kinds, like cottonwoods, willows, and elms, require not only more water than others, but their root systems are capable of rapid and enormous extension in search of water, so that their influence is far-reaching. Grape-vines are of the same nature, so that it is almost useless to cultivate in the neighbourhood of a vine-yard, unless the soil contains a superabundance of moisture. The taproot trees are less injurious, because they supply themselves from greater depths; while the shallow-rooted ones, like black locust, beech, spruce, &c., compete on the same level with the annual crops.—*Public Opinion.*

The Coffee Crop of Liberia has proved an almost entire failure this season. The prices for Ceylon and Straits crops of Liberian ought to rise.

Fluffy Tea Dust.—It is rather extraordinary that Mr. Peter Short can nowhere in the Dimbula district, find a planter willing to supply the fluffy dust of the tea, now either sold to natives or burnt. We suppose the difficulty is to make up a sufficient quantity. If Mr. Short or the firm's Agent would start a cart or carts to itinerate and call at every store once-a-week, we should think all the fluffy dust could be secured with the minimum of inconvenience to the planters. It certainly does not seem businesslike for a bye-product worth 3d to 4d a lb. to be comparatively wasted or worse than wasted.

"Triangular" *versus* "Square" Planting is a subject exercising Tea planters in some places up North. With the same distance between the trees, the former system seems to be the most economical as far as ground is concerned, bringing in 2,012·18 trees to the acre, against 1,742·47 on the "square" method. Triangular planting too, is said to possess the advantage of simplicity of execution. This is the method given in the *Planter:* Measure out a base line on flat land if possible. On the base line take any number of stakes, say, when planting 5 feet by 5 feet, take 21 stakes (20 spaces). Have two chains of 100 feet each, lay them out to the front from the 1st and the 21st stakes, and makes the ends meet, holding them straight and tight, put in a stake and there is the apex of your first triangle. Then lay the chains from the 21st to 41st, make another triangle, and so on; the triangles can be filled in by small boys. Simple enough indeed for anyone.

Cinchona Plantations.—There are nearly four million living cinchona plants at the Government plantation in Sikkim and Nimbong. The outturn of the cinchona factory during 1894-95 was 8,318 lb. of sulphate of quinine, the produce of 393,150 lb. of yellow bark, and 4,032 lb. of cinchona febrifuge, the yield from 105,560 lb. of red bark. The outturn in 1893-94 was 4,765 lb. of quinine from 230,100 lb. of yellow bark and 3,848 lb. of the febrifuge from 91,800 lb. of red bark. Thus, while it took nearly 24 lb. of red bark to yield a pound of febrifuge in the previous year, 26 lb. of the bark were required for the manufacture of a pound of febrifuge during the year under review. On the other hand, in order to produce a pound of quinine, 47 lb. of yellow bark were required during 1894-95, against 48 lb. in the previous year. Owing to the increased demand for quinine, two or three hundred additional acres have been prepared for being planted with new trees. *Pioneer*, Sept. 7.

Official Retailers of Quinine in Italy.—A proposition exciting a great deal of indignation among Italian pharmacists has just been presented in the Chamber of Deputies by Signor Garlanda, who wishes tho Government to supply sulphate of quinine in 1 gramme tubes to the general public at 10 centimes each, through the licensed vendors of tobacco and salt (this latter is a dutiable article in Italy). This bill reads as follows: "For public and hygienic reasons the Minister of Finance is empowered to furnish to the general public sulphate of quinine by means of tho vendors of dutiable articles. The sulphate of quinine shall be supplied to the vendors in hermetically sealed glass tubes, each containing 1 gramm. Upon each tubes shall be placed a stamp value 10 centimes, which will be the selling price of the said tube." The Neapolitan pharmacists at once telegraphed to the President of the Chamber of Rome in those terms: "The Neapolitan pharmacists strongly protest against the proposition Garlanda, which violating sanitary law, injuries vested interests and gravely offends professional dignity." Besides the Neapolitans, the chemists of Florence and Venice, as well as the pharmaceutical associations in Italy generally, are actively agitating for the rejection of this unjust and illogical bill.—Ibid.

Coffee in Mexico.—A Mexico telegram of June 18th to the Boston *Herald* says:—"The coffee crop is estimated this year as available for export at 25,300 tons, against 20,700 tons last year. Many new plantations come into bearing this year."

Vine Culture in Colombo.—We call attention to interesting details given elsewhere; but it will be time enough a year hence—or even later—to begin to speak of success, if such be the outcome of M. Zanetti's experiment. The very description of the soils in which the vine delights, indicates the boldness of the experiment in Colombo or its neighbourhood.

The United Planters of Southern India are reminded by the *Madras Mail* of the proverbial saying: "Everything comes to him who knows how to wait"; but instead of the last word, an intelligent compositor has made it "*wail*"; and so the Indian Government is to hear some *wailing* with reference to planting wants.

Paving Stones.—Colonel Waring mentions —in the *Review of Reviews*—that in New York the city ashes have been utilised by being converted into paving stones:—

Fifteen parts of ashes to one part of Portland cement, producing a concrete that would be admirably suited for the foundation of stone-block, asphalt, or other pavement.

Shipments of Cinnamon.—For the last few days there have been unusually large shipments of cinnamon to London, the largest shippers being Messrs. Volkart Bros., Schultze & Co., and Messrs. de Soysa. Altogether over a thousand bales have been shipped, and the product is at present in great demand. An unfortunate mishap occurred this morning alongside the "Glen Orton," for a large bale of cinnamon, while being put on board, fell from the slings into the sea. The contents were recovered as speedily as possible, but were found to be wet and useless.—Local "Times," Aug. 31.

Brazil Coffee Crops.—An old Sao Paulo subscriber, who is familiar with the coffee-producing districts of that State, writes us as follows:—"Noticing the accompanying paragraph"—the item in regard to the damage by frosts, which appeared in our last issue— "I may tell you that as the result of a personal visit to the districts named therein, within the past few days, you may take it from me that the damage is practically nil. So far as these districts are concerned nothing has happened up to now to materially depreciate the future crop."—*Rio News.*

The Coorg Coffee Crop: Official Forecast. —According to the official forecast, the Coorg coffee crop for 1895 96 is estimated at 6,076 tons. Last year it amounted to 5,354 tons, and the annual average for ten previous years is set down at 3,561 tons. The coming crop is made up of 3,037 tons Plantation and 3,039 tons Native coffee. Putting the value of the former at £100 per ton and of the latter at £75 per ton, the coming crop represents £303,700 and £227,925 respectively, or in all £531,625. This at the current rate of exchange means 96¾ lakhs of rupees.—*M. Mail.*

Russian Tea Plantations in the Caucasus.— The cultivation of the tea plant in the Caucasus seems so far to have been very successful, and (our Moscow correspondent informs us) it is expected that in the course of time Russia will be able to grow a large portion of her own tea, instead of importing this product from China and Ceylon. A Russian tea merchant in Charkoff only recently paid 70,000 roubles to a tea-planter near Batoum, on condition that he could have all the tea grown by the planter for a period of ten years. It is said that the tea grown in the Caucasus is of excellent quality.—*Daily Chronicle,* Aug. 22.

Coffee Planting in Selangor.—The "Selangor Journal," of the 23rd August says:—We have received an addition to the ranks of European coffee planters in Mr. Spencer St. George Carey and Mr. W. Greig, who have arrived from Ceylon to take up land in Selangor.—Local "Examiner."

Cotton Growing in Borneo.—"There seems," says the *Kobe Chronicle*, "little doubt that the commercial men of Borneo will be encouraged by the expansion of the cotton-weaving trade to devote their attention to the cultivation of cotton, and we may look forward to hearing even more about Borneo than has been our wont"—*S. F. Press.*

"Planting Opinion, a Fortnightly Journal (with Weekly Market Supplement) written by Planters for Planters," is published at Coonoor, and a copy of No. 1 has reached us. It is a modest undertaking of about 14 pages the size of our *Tropical Agriculturist.* We wish the venture all success, and take some extracts from it elsewhere.

Tea Extension in Ceylon.—It is rather a striking fact that while 188,000 acres were planted with tea in the time of Sir Arthur Gordon between 1883 and 1890, only 85,000 acres have been added during the term of our present Governor. In 1883 the total area was 32,000; now it is 305,000 acres of tea valued, we suppose, at not much less than ten million pounds sterling.

The "Agricultural Gazette" of New South Wales, Volume VI Part 6, for June, 1895 has the following Contents:—Useful Australian Plants, J H Maiden, Colonial or Moreton Bay Pine ("Araucaria Cunninghamii," Ait.); Forest Wealth of Gloucester, A Rudder; Remarks on Weeds, the Soil and its Fertility, J G O Tepper; Fruit Culture, A H Benson: Australian Entomophytes, or Entomogenous Fungi, and some account of their Insect Hosts, A S Olliff; Cultivation of Hops, J Coleman; Beef Producing Breeds of Cattle, J L Thompson; Chemical Notes, F B Guthrie; Poultry Notes, S Gray; Practical Vegetable and Flower Growing Directions for the month of July; Orchard Notes for July; General Notes; Scaline, an alleged Fodder Plant, Seeding of Red Clover, Sending Specimens to Department, Imports into United Kingdom in 1894; and Agricultural Societies' Shows, 1895.

Coconut Products.—We have a request from the Secretary of the "Jamaica Agricultural Society" for information in respect of the preparation of desiccated coconut and of coconut oil. The new edition of our manual will give nearly all that is necessary; but of course, machinery to express oil after the fashion of the few large mills in Colombo is an expensive matter; while even in respect of the desiccating process, a complete set of the machines used (including steam-engine and boiler to drive the same, if water power is not available) will run into £400 to £500. We understand that the Colombo Commercial Company has just shipped a set of machinery for a Coconut Desiccating Establishment to Zanzibar;— and no doubt the West Indies will want to follow.

A Curious Trade.—Consul Scott mentions a curious export from Swatow, viz., ducks' eggs, which he has observed on steamers bound south for Bangkok and the Straits. They have, for the most part, been incubated to within a few days of hatching. They are taken on board the steamers in shallow baskets in large numbers. In the baskets they are arranged in layers two or three deep, each layer carefully covered and surrounded with soft Chinese paper. No sort of artificial heat is applied to them. The baskets are placed anywhere about the deck, or slung to the awning supports. The soft paper and the heat of the climate as the vessel runs south are sufficient to preserve the newly-hatched ducklings from injury, and not only so, but before the vessels reach their destination most of the eggs are hatched out, and in lieu of the eggs that were shipped hundreds of healthy young ducks are landed at Singapore or Bangkok.—*Pioneer.*

Fruit Farming in California.—Mr. J. J. Macdonald, in a paper—in the *National Review*—entitled "The Fruit Farming Fiasco in California," pours cold water upon the glowing pictures of fruit farming prosperity, and explains that fruit farming is very hard work, and yields very little profit :—

While California is not the "poor man's paradise" which it is often represented to be, it is in many respects a good country, and there are many good people in it. One would naturally imagine that in a country of such extended area, with a population less than that of Chicago, a man willing to work should have no difficulty in getting employment, but there is no State in the Union in which the labour market is more congested, and it is far easier to get steady, continuous employment in Chicago than in California. Living, however, in cheap in California, and the luxuries of life are abundant. The fruit industry has been overdone, and the supply is greater than the demand. The country has been over-boomed, and is suffering from the reaction which follows that artificial mode of stimulation.

Kangra Valley Teas Marked "Darjeeling."—A merchant calls attention to the "general" paragraph of Messrs. Alfred Harvey & Co.'s Melbourne Tea Report—see another column—in which we are told of "an increasing number of poor Kangra Valley and kindred growths boldly marked Darjeeling"; and then the Melbourne firm adds :—"It is almost a pity some of the more venturesome shippers do not send these via Colombo, marked with some crack Ceylon garden, and so avoid injuring the good name of one of their best districts." Of course this is meant as "a goak" by Messrs. Alfred Harvey & Co.; but in our estimation, it is a very sorry if not stupid one ; for they must know that any one putting the name of "a crack Ceylon garden" on tea that did not belong to it, would run the risk of an action at law ; and (2) that as tea is dealt with on its merits in Melbourne quite as much as in London, no one is likely to be deceived by "Darjeeling" or other highly esteemed marks on poor teas. Ceylon certainly cannot throw a stone at poor Kangra Valley teas ; in view of the considerable quantity of inferior quality tea produced in this island as London and Melbourne as well as local prices show.

An Interesting Factory.—Fray-Bentos which is about 45 miles distant. I daresay most people have heard of Liebig's factory of Extract of Beef and this is the spot where the factory is situated. Before the factory was opened, this place was a small fishing village. It was founded by a friar, "Fray-Beneto." The factory stands on a bluff overlooking the Uruguay which flows about a mile from the town. In the season, which lasts about five months, Liebig's Extract of Meat Company here kill 1,000 cattle daily, and each carcase gives usually about 8 lb. of beef extract. The factory employs about 800 men, the staff including manager, clerks, engineers, tinsmiths, carpenters, physician, and school teachers. Capital schoolrooms are provided and there are two reading-rooms and an excellent library. During my stay the killing season was in full force, and in one day I saw 1,300 head of cattle killed. The rapidity with which it is done is remarkable. The average time of killing, skinning, and cutting up each animal being only seven minutes. The killing process is very good, far better than that practised at home. The Liebig's Company import about 10,000 tons of coal yearly for the sole use of this factory. Mr. Gunther, a German, is the manager, and gave us some good partridge shooting, but the moquitoes were so bad that we had to stop and take refuge in the nearest house. At length the river rose some six feet which enabled me to leave for Praysandu, a town about 58 miles from here.—Commander Neeld of H.M.S. "Beagle."—*The Devizes Gazette.*

Sir Water Sendall—so long and honorably connected with the Public Instruction Department of Ceylon—has been interviewed by the *Westminster Budget* on the subject of "Cyprus" and the result is a very interesting paper which will be found in our *Tropical Agriculturist.*

Adulterated Vanilla.—A colonial merchant M. Gaston Baraton, appeared at one of the Paris police courts a few days ago, on a charge of selling adulterated vanilla. He had disposed of a considerable quantity of vanilla in both Paris and Antwerp which had previously been treated with ground glass, as a means of increasing its marketable value. M. Baraton protested, in defence, that he had merely used boric acid for the manipulation in question, and as evidence of the quality of his porducts showed the awards that had been given him at various exhibitions. He was condemned to six months' imprisonment, and to pay a fine of 1,000f. (40*l*).—*Chemist and Druggist*, Aug. 31.

The Colombo Tea Market undoubtedly deserves the more liberal support of our planters, seeing the exceedingly good prices which have recently been obtained there. When a lowcountry estate Broken Pekoe sells at over 70 cents per lb. apart from other very satisfactory sales, we should expect very considerable additions to the quantity sent to the Colombo mart. Our new buyers naturally want larger sales, and instead of 5,000 would like to see 10,000 chests brought forward weekly. Mr. Lampard has a strong opinion that a great deal more might be done in developing the Russian and other foreign markets direct from Colombo, if we had bigger sales and a more liberal policy all round. His views well deserve the attention of the "Committee of Thirty" and Tea Traders' Association.

Bananas in the United States.—The *American Grocer* shows that the imports of bananas into the United States are equal to one million pounds sterling per annum !:—

The imports of bananas for the past five years were valued at $25,992,483, or an annual average of $5,198,497. In 1884 the value of the imports was only $1,892,013. Since then there has been a steady increase every year until 1891, the maximum year, as the following table shows :—

1884	..	$1,892.013	1888	..	$3,157,989
1885	..	2,146,114	1889	..	3,578,325
1886	..	2,357,663	1890	..	4,654,048
1887	..	2,729,477	1891	..	5,855,682

The banana has steadily grown in popular favor. It is nutritious, palatable, cheap and of great value as food. It is within easy reach of the poorest. For a nickel a day each member of a family of five may enjoy a ripe banana of good size and quality.

Planting in Central Africa.—In Mr. Alexander Whyte's report on the botanical aspect of the region over which he exercises influence in British Central Africa—principally the Shire Highlands—it is stated that when European implements are placed in the hands of the natives, they make good field labourers while with one or two exceptions all European vegetables do well, their pletiful supply contributing materially to maintain the health of the whites at the various stations. English potato tubers were spoiled in transit by the extreme heat; but by a little management excellent potatoes were raised from seed, and, as Mr. Whyte points out, the result is that the plants now growing are practically indigenous. They show no signs of disease, and are not so liable to degenerate as the offspring of English tubers would be. A large number of other economic and ornamental plants are also flourishing among them wheat, barley, oats, lobelias, roses, pinks, balsams, phlox mignonette, and so forth. In fact, the British settler in the Shire Highlands will find himself very much at home in his tropical garden. Some familiar home flowers, however, assume gigantic proportions under an African sun. Geraniums grow as high as hedges; and sunflowers dahlias, amaranths, and cannas shoot up into tall, shrub-like plants.—*Pharmaceutical Journal*, Aug. 24th.

Tobacco.—During the first half of the present year 106,292 lb. of tobacco—nearly the whole of which was in the form of cheroots—were shipped from Madras as against 77,005 lb for the same period in 1894.—Ibid.

The Jute Industry is increasing by leaps and bounds in parts of the Purneah district, and in a few years we shall in all probability see a greater area given up to its cultivation than is at present under indigo a crop which is far more precarious. —*Indian Engineer.*

China Tea Exports.—Our special telegram from the Far East shews a slight comparative falling-off in the current export of China and Japan teas to the United Kingdom. The important part of the season is now over and we cannot expect much addition to the figures just telegraphed.

The Tusser Silk Industry was once a flourishing one in many parts of India, but it has practically disappeared except in a very small way, and in but one or two district. A certain difficulty attends the reeling of the silk from a tusser cocoon, and we are glad to hear that Mr. Otto Anz, of Hamburg, has the courage to propose to start a tusser reeling industry in India. A parcel of 20,000 cocoons was lately forwarded to him from Bilaspore, in the Central Provinces, where a certain amount of attention has been bestowed upon the industry during the past year. Mr. Anz's opinion of them is awaited with interest.—*Indian Engineer.*

The Calcutta Tea Market.—We understand that the losses made by buyers during the first few months of the season—May to July—were simply appalling. Thousands of pounds sterling dropped by individual buyers form a very serious experience. The cause is found in the comparatively bad quality of the teas of this season, especially as compared with last year, and the Calcutta buyers in absence of good teas, appraised the value of those available, far above the value given to them in London. Teas judged as "finest" in Calcutta, were put down as only "fair" in London; "fair" became "medium;" "mediums" were classed as "common," and "common" were deemed worse than "China's" or even the poorest "Ceylon's." India has evidently had one of the worst "tea" seasons experienced for a long time—hence the present firmness of our Ceylon average in the home and local markets.

Coast-lands in Madagascar.—The following is a passage from the letter of its Special Correspondent (Mr. Knight) in the latest London *Times* (Aug. 12th) descriptive of his journey along the South-East Coast of Madagascar:—

The coast scenery we passed on this journey is as beautiful as any I have ever seen. Spurs from the inland mountain ranges form grand promontories enclosing lovely bays. Every few miles some fine river pours its waters into the sea. All these rivers have narrow mouths, closed to shipping by narrow bars, but open out inside the sand dunes into extensive lakes or lagoons, with shores winding in many capes and bays. The hills that slope into these lakes are clothed with tropical bush and groves of palms and traveller's trees, while the plains and rolling downs which extend to the distant mountains are generally covered with fine grass, affording excellent pasture. But this magnificent country is very thinly inhabited, and the greater portion of it lies waste. We often travelled all day without seeing a human being or a sign of cultivation, and it was only around the rare villages that small but luxuriant patches of rice, maizes, cassava, and sweet potato testified to the richness of the soil. Sugar, coffee, and all tropical produce have been proved to thrive on this fertile coast, and this would certainly be as good as any country in the world for the white colonist, were it not for the coast fever, especially deadly at this season of the year—the termination of the rainy season, when the subsiding waters leave leagues of foul mud to fester in the sun.

What has been said of parts of Ceylon is applicable:—

Thou'rt fatal as thou'rt fair.

Forest Department, Ceylon.—Return showing the Revenue and Expenditure of the Forest Department for the five years 1890 to 1894, was called for by Mr. Coomaraswamy, M.L.C. It is unexpectedly satisfactory, the results as given by Capt. Walker being as follows:—

	R.	c.
Total Expenditure for the last 5 years	2,199,635	37
Total Receipts for the last 5 years exclusive of value of free grants and of stock	2,131,801	67
Total deficit ..	67,833	70

The sum of R200,826·74 incurred during the five years on account of buildings, surveys, demarcation, planting, &c., from which no revenue can possibly be derived for many years to come, should not be shown as expenditure against the year in which it is incurred. This should appear as capital, being money sunk and invested in Government forests, the benefit of which will be derived in future years.

The large sum of R42,005·18, being amount of free grants of timber made during the five years, should appear as a credit to the Department, but which is not shown at all. Were these and other items correctly accounted for there would be no deficit, but on the contrary a large profit would appear to the credit of the Department; thus, the total receipts for five years being R2,131,801·67, to which, if added the value of free grants of timber amounting to R42,005·18, will give a total of R2,173,806·85. And if from the total expenditure for the five years, viz., R2,199,635·37, is deducted the amount expended for buildings, surveys, demarcation, &c., viz., R200,826·74, the total expenditure would be reduced to R1,998,808·63, thus showing a balance in favour of the Department of R174,998·22 for the five years.

New Products and Retirement of a Pioneer.—We call attention to the interesting paragraph headed "Matale" with the announcement that Mr. Munton has leased his Wiharagama property to Mr. Gordon Reeves and partners. This practically means the retirement of Mr. Munton from a long-continued series of experiments, struggles and successes with new products. Who speaks in Matale now of coconuts and arecanuts as new products—or of arnotto, ceara rubber, castilloa and para, cloves, nutmegs, the sowing of sapan, lunumidella, vanilla, pepper and plantains forsooth?—Cocoa, Liberian coffee and marogogipe?—and yet for all of these, in his day, Mr. Munton has been accounted an "eccentric" but never a "genius"! Nevertheless how much valuable pioneering has he not done; while the remembrance of many failures and disheartenments in the struggle with leaf-disease does not, we feel sure, prevent his present giving up of the Matale property being any less a wrench. Wiharagama is on the Sudnganga, not many hundred yards from where Mr. Munton first crossed the river on horse-back in August 1859; but the estate was not purchased by him until about 18 years ago. Mr. Munton's previous purchase was Lochnagar in North Matale, also a very profitable investment. We can all see now that the resolute sticking to new products was in bygone days and even up till today, a real and commendable effort; but in the "seventies" and early "eighties" chiefly so,—as the struggle then was frequently a ghastly one. All honour to Mr. Munton and further success to Mr. Gordon Reeves,

DAYS OF OLD AND SPORT IN CEYLON.

(By a famous Raconteur.)

August 16.

KANDY IN THE FORTIES.

To hark back a bit. In 1845 the only Hotel in Kandy was "Spencer's" kept by an old Mess Sergeant of the 18th Royal Irish. This was the building afterwards known as the office of Messrs. Keir, Dundas & Co. In this hostelry society was of a very mixed order, the food execrable, and discomfort rampant. Mr. Venn, in addition to his Colombo business, had a store in Trincomalee Street, Kandy, superintended by a "party" of the name of Walker. This unfortunate man met with some accident and Shipton cut his leg off. Asking Venn some time afterwards how this unfortunate fellow was getting on. "Oh!" said he, "first class, wonderfully cared for, public sympathy, my dear sir, public sympathy." But I doubt if he got very fat upon that. There was another shop of all sorts a little higher up, kept by a Mr. Hart, who besides announcing that he sold everything from a needle to an anchor, dabbled a bit in the fine arts, and did some sweet things in oils of a bold coloury nature. Remarking on one of these one day, I said, "Surely, Mr. Hart, that is copied from one of the old masters?" "Right you are," replied the artist, "that's taken from one of Crackers" (Caravagio). Wolfe had a store on the Esplanade, Brodie was just opening in Malabar Street, and several other "Emporiums" were kept by Burghers. One of the evening amusements in Trincomalee Street was to inspect the bakers, where regularly every night the performance took place of a couple of perspiring coolies kneading an immense lump of dough with their naked feet! (This style may be going on at the present time for aught I know.)

At that period there was great progress being made in opening up

THE MATALE DISTRICT.

I well remember the Matale Resthouse being kept by a Mr. Carruthers, and an advertisement of his in the *Ceylon Herald*, in which Mr. Carruthers vaunted the extraordinary advantages offered by his establishment, adding "Here ladies may board themselves or can be boarded by Mr. Carruthers." At that time the Mahawiliganga was crossed at Katugastota by a ferry boat. The bridge was not completed until 1859 by the P.W.D., Churchill in charge; while my old friend Capt. Donald Graham built the Gampola bridge. Executions were carried out in public then, on a mound called "Gallows Hill," appropriately; somewhere about the regions of the Kandy new market. I happened to be present on one occasion, when the criminal, who was one of the biggest Sinhalese I ever saw, broke the rope three times in succession. Whether there was any collusion between the hangman and the culprit I don't know, but three times he was strung up and three times the rope failed to hold him—a grievous sight. Then young Kersterman who was afterwards in the Rifles, galloped off to the Pavilion where Lord Torrington happened to be staying at the time, and begged his interference which resulted in a temporary reprieve; this however came just in time to save a fourth attempt being made. The unfortunate man died afterwards in gaol, thus cheating the scaffold. I believe he was guilty of some atrocious murder.

Judging by your paper,

THE MERRY BURGLAR

appears to be doing a thriving trade in your part of the world. During my Ceylon experiences I suffered severely from robberies—the worst being the theft of my wife's dressing case with between £300 and £400 worth of jewellery. This was stolen out of a safe during the time I was ill in Colombo. At the same time everything in the way of linen, blankets, sheets, &c., were stolen out of the Glenloch bungalow, in fact a clean sweep of nearly everything that was portable. But not a clue, or a trace of these was ever found, although my name was marked upon all the table and bed linen, and even woven into some of the blankets. With you still, robbery appears of nightly occurrence, and detection by the Police unusually disappointing. Now, how is this? I will enlighten you. Say a wholesale clearance is made of some bungalow, the loot is carried off at once to one of the native schooners or dhonies in the harbour, and is safely landed at Tuticorin, or some other adjacent port, in the course of a day or two, and there disposed of. It is never kept in Ceylon, but directly the haul is made the enterprising cracksman embarks his swag, most probably some of the gallant crew being his pals. This is the way it is done! and if a *proper* search is instituted, just as one of these craft are getting under weigh I'll be bound a haul will be made. I remember pointing all this out to your late Superintendent of Police, but nothing came of that. Police, Lord bless you, I know a bit, especially about police sergeants in charge of districts, you bet! A more corrupt lot did not exist in my day, but all that is changed *n'est pas?*

There was a good deal of

ELK HUNTING IN THE FORTIES

and beginning of the fifties. There were two fine packs in Dimbula in 1850. One was owned by William Fairholme at Wattegoda conjointly with Fred. and Edward Palliser at Radella. The other by Jack Bannister at Bogahawatte. The Dimbula jungles then with the enormous acreage unopened, swarmed with elk, and there were also many more leopards knocking about than in these days, and many a costly English foxhound fell a prey to these whilst returning jaded after a long unsuccessful run; so that what with disease and occasional loss of hounds, a pack was an expensive establishment to keep up. The progeny raised from English stock were less subject to disease, better acclimatized, and not so subject to the prevailing maladies of pneumonia and enlargement of the liver, which was generally the case with all imported hounds. Many a nice pup have I seen brought up by a foster-mother in the shape of a Tamil girl, (no doubt this will shock your delicacy,) till they were able to lap the brose themselves, and good nurses they were, and proud of their four-footed charge.

AN ELEPHANT

put in an appearance in one of the ravines below Bogahawatte estate. Some coolies ran up to tell Bannister. He had no bullets in the house or bulletmould, so he set to work, and melted down some spoons, and cast two or three balls in a tobacco pipe, with which when hammered a bit into shape, he proceeded to load up; tracked the elephant down to the river, and shot him in the small stream close by where the short-cut goes up to Mt. Vernon above the Madecoombura Bridge. This happened just before I came to Kelliwattie, and I often saw the skeleton afterwards when out after elk. The head was sent to Warminster. Of

course the late Sir Samuel Baker and his brother John kept a fine pack of hounds at Nuwara Eliya, which afforded great sport, and to which the brothers devoted themselves, as described in those delightful works, "The Rifle and the Hound" and "Eight Years in Ceylon."

In the beginning of the "fifties," there were merely native paths to the

UPPER DIMBULLA ESTATES,

Wattegoda, Radella, Louisa (opening) and Pallaradella through the patanas down to the ford at Medacombura. All estate supplies were generally carried up by coolies, by way of Pussellawa, down to the Kotmale Ferry, through patanas and paddy fields to the Limekiln Ferry, and then up a precipitous path through patanas to the Upper Wattegoda road, a mere track through the jungle, where now-a-days I believe the Medacombura, or Wattegoda Railway station is placed. There was a flat-rock where a halt was always made in completing the ascent from the river. This rock was always called "Rest and be thankful" and full advantage was taken of the same. I remember a fine powerful young Scotchman, David Bell, who was on Wattegoda and who carried a bushel of rice without a halt, from the Limekiln to "Rest and be thankful" as an example for his coolies to follow.

I had a great horror of

SNAKES

in my earlier days, and could in common with many others, specially fishermen, relate a variety of tales connected with these. I have only seen two Europeans who were bitten by them, Mr. Langshaw, then in the Wynaad; and the present Major Quarry, then a Lieut. in the C.R.R., was bitten by a tame cobra, he was in the habit of playing with—I believe a solitary case, except the late General de Saumarez, but the latter suffered to the end of his life from the virus. I once had a well-preserved python's skin offered to me. It was 22 feet long, and I afterwards regretted I had not accepted it, as it would have made a novel suit of clothes; this python was killed at Tippekardoo. Some of the old lowcountry Sinhalese can relate some very astonishing tales anent snakes. I remember asking an old elephant tracker what might have been the length of the largest snake he had ever seen in the Trincomalee jungles. His reply was to this purpose,—"The longest snake I ever saw was about the length of the shadow of a coconut tree at 5. p.m." This must have been a whopper. The door leading into the verandah was the last I generally closed at Glenloch. One morning my appu called my attention to my having squashed the head of a cobra in shutting the door, a brute about five feet long!

One of the chief regrets that press on my mind in connection with my sporting adventures, and with which I never cease to reproach myself is as follows:—Whilst shooting in the Hambantotta country not very far from Maha-Tisserama, quietly plodding along a sort of deserted road leading to a ruined dagoba, in coming round a corner I suddenly almost ran up against a huge elephant; he was standing with his back to me, and grasping the situation as he slowly turned his head round I killed him with the ear shot. Now this was a most wonderful elephant, a male, evidently stone-blind, and no doubt deaf, or he must have heard my approach. He was in very poor condition, much marked with leprous blotches about his head. His enormously large ears were torn and tattered all round their fringe; but the most remarkable thing was the formation of his head which instead of possessing the concave features of the common or as one may say indigenous elephant of Ceylon, had hardly any temple depression but a rounded surface above the bulb of the trunk, in fact in every way he bore undoubted similitude to the African species. Now, how did this animal turn up in Ceylon. He was of a great age undoubtedly, the trackers said they had never seen the like, and in fact they first called my attention to this change in appearance. This I am now greatly exercised about, as it would have led to much discussion and many theories would have been started. I fully intended revisiting the spot a week afterwards, but both myself, and most of my coolies were seized with deadly fever. I lost some 14 of them, and how I ever got back into Badulla I don't know to this day. This was the result of being over-persuaded in a weak moment to accompany an Indian friend, who wished to kill an elephant, but who should not have chosen the month of August for his debut in the Hambantotta forests, and its malaria.

J. T.

A JAPANESE SEED AND PLANT FIRM.

The mail brings us a copy of the very ornamental and neat catalogue of L. Boehmer & Co., exporters of Japanese lily bulbs, plants, seeds, &c., Nos. 4, 5, and 28 Bluff, Yokohama, Japan, established in 1882. It is got up after quite an ornate Japanese fashion and includes photographs as well as lists and prices of plants, &c.

SALE OF HOOLANKANDE ESTATE.

The purchaser from Mr. Somes of this well-known Kellebokka estate is the Earl of Glasgow who is adding it to his Poengalla property which (though in Matale East) adjoins Hoolankande. Both estates are on the boundaries of their respective districts; but Hoolankande will henceforward be worked as one with Poengalla, the total area being 1,205 acres of which 800 acres are cultivated chiefly with tea though 10 acres are in coffee, 27 in cardamoms and 64 in timber, grass, &c

HOW IT STRIKES AN "OLD COLONIST," *RE* PRÆDIAL PRODUCTS.

I'll example you with thievery.—Shakespere.

Amongst the surprises I get on my return to the island is the apparent difficulty of obtaining evidence of thievery, and the consequent collapse of a Prædial Products Commission.

Now, I was never guilty of running down or disparaging the natives of Ceylon, my leanings lie quite the other way. I have been accustomed [illegible] of the Sinhalese as—like the Irish—[illegible] peasantry in the world and to [illegible] the raw material as imported,—I have a great regard.

But there are striking exceptions and these are almost invariably located around our populous centres—the educated loafers to wit—than which no viler type of bipeds ever trod this beautiful earth. Apeing all the worst vices and copying none of the virtues of Europeans.

About a quarter of a century ago I recollect writing to *The Observer*, and picturing as well as I could, the great chieftain thief of the mountain capital,

DON WANDEROO HAMY,

the employer of nocturnal coffee pickers, and prosperous merchant. Plump and sleek, as he drove in his own waggon to the railway station with buttons, rings and chains of gold, glittering in the morning sun. How he appeared in Baillie Street with his samples, and how the big mercantile bully of the day guffawed as he leaned back from the tiffin table declaring for the edification of all subs, that their own Agents in Kandy were the veriest fools in this island of imbeciles.

Here, said he, is Don Wanderoo Hamy again selling us 5,000 bushels good garden parchment at 1s less per bushel than the limit sent to our branch a week ago and at which the idiots are as yet unable to operate!

The matter attracted some notice at the time and a Commission was talked of which I was invited to join, but it came to little and soon after this a more insidious enemy to coffee absorbed our attention.

Don Wanderoo Hamy is dead and gone to the —— land of his fathers; but he has left a marvellously prolific and fearfully degenerate progeny around Kandy.

No evidence of stealing!

Let me in the plainest possible language tell my unadorned tale; I have only been in the island about three months at this time; but my experience has alas! been ample to qualify me as a first-class witness.

My first taste was from a "Contractor" who got heavy advances and under the impudent pretence of clearing for planting, carted off and sold all the timber, then bolted with all the estate tools and never more was heard of, leaving the doray to prepare the ground for planting as he best could.

Our special care and pride was, however, our nursery of the finest jat which we watched over and watered with tenderest solicitude till the rains came when ho, for planting out!

Imagine if you can, our exasperation at this stage, to find that during one moonlight night the the whole of the available plants disappeared, nobody was supposed to know how or whither.

Not to be baffled by this we at once set to work to purchase and germinate the best seed obtainable for the purpose of planting at stake; but on taking a quiet walk last Sunday evening I found one estate coolie had been caught carrying off germinated seed. On hearing this I returned to the bungalow and sat down to dinner in no very thankful or Christian spirit.

"Boy! What *is* the matter with the curry tonight?" "No coconut sar." "Then *why* not coconut? Are 100 trees not enough to supply you?" "Only koorumbas, sar, thieves take all ripe nuts."

Well: I wouldn't like to write down all I said and thought on this occasion. I plead indigestion, and hope for pardon. I do not blame anybody in particular—except the devil, who seems peculiarly at home in this warm island. Least of all do I blame the present very able and painstaking P.M. who vigorously endeavours to do the best that *can* be done with such poor effete and pointless tools as are at his command; but pray do not drive me desperate by languidly saying, there is no evidence of stealing! Nor blame me if I adopt the remedy recommended by R.B.T. It may be rough. It may be risky, but meanwhile it seems the only feasible protection for *honest industry*.

PLANTING AND PRODUCE.

JAPANESE TEA.—In his official report on the trade of Tokio for 1894 Mr. Consul Troup says: "The tea export of last year amounted to 29,946,528 lb., as against 28,760,695 lb. in 1893. On the whole, the quantity of tea exported from here does not vary greatly from year to year. The market for new teas opened towards the latter part of April, and a large business was done during the following three months. The quality of the crop was superior to that of 1893, and silver prices have ruled from 20 per cent to 25 per cent higher than in that year. The fall in exchange, however, has admitted of the tea being laid down in the American market at lower gold prices. An impression appears to have prevailed there that the outbreak of the war between the two countries would interfere with the export of tea from both China and Japan. This has certainly not been the case as far as this country is concerned, but this notion, together with the more favourable conditions existing in the United States, contributed to stimulate the export during the autumn months. The result was that considerable profits were realised, and the causes above enumerated have made the year a good one for both exporters and producers. Stocks here at the end of the year were low, mostly of inferior qualities, and very dear.—*H. & C. Mail*

THE AMSTERDAM MARKET.

August 22nd.

At the cinchona auctions, which will be held in this city on August 29th (writes our correspondent), 6,521 bales and 154 cases, weighing together 600,510 kilos, will be offered for sale. The manufacturing portion of this bark consists of 585,651 kilos, with an equivalent of 29,639 kilos of sulphate of quinine (5·06 per cent), the druggists' bark of 14,889 kilos, containing about 347 kilos of quinine.—*Chemist and Druggist.*

TEA BLIGHTS AND INSECTICIDES.

The following letter from Dr. Watt, dated the 6th of July, was read at the Sixth Annual Meeting of the General Committee of the Assam Branch of the Tea Association:—I regret to say that I am not in a position at present to give the Association any very definite statement of my investigations. So far I have found, not three or four, but perhaps over 100 blights, the majority of which are at present of no serious moment. One or two are, however, very important, and certain of the others might suddenly assume alarming proportions. I think it therefore essential that every enemy of the tea bush should be thoroughly investigated.

ADHATODA VASICA.

A special feature of my visit to Assam was to inquire into the value of Adhatoda Vasica as an insecticide. So far I have found: (1) That the value of the plant as an insecticide varies greatly according to the climate and nature of the soils on which it has been grown—richer in dry hot climates and poor soils than when allowed to run into large vigorous plants in damp rich soils. (2) That as found in Assam it does not appear to kill mosquito, though it undoubtedly stupifies the insects. I have, however, met a few planters who speak highly of Adhatoda in the treatment of mosquito, and I mention this circumstance since my personal experiments have not proved very satisfactory. (3) It kills red spider as also not of the minute insect pests.

These results are not, therefore, so far very encouraging, but I would caution the Association from rushing to the opposite extreme, *viz.*, that it is valueless. We have much to learn as to how we should grow the plant, when it should be cut and the way in which the insecticide should be prepared. I hold as strongly to my original opinion now, as I ever did, that we possess in Adhatoda an insecticide of considerable value. It costs nothing more than the labour of using it. The infusion possesses distinct manurial merit. It is quite harmless. I would not therefore abandon experimenting with it till we have conclusively demonstrated that it is less valuable than other insecticides, the merits of which more than compensate for their expense.

AN ENEMY OF PURE JAT TEAS.

The members of the Association will doubtless admit that it is a very general experience that pure Assam jats of tea are, as a rule, pale yellowish green in colour and flush late. When this yellowness becomes abnormally high it will be seen that it is not natural. The leaves get in addition a pinkish tinge and later are bronzed, become spotted, dry and unhealthy looking; the bush is also bangled. This is especially common on badly drained soils, or during exceptionally hot seasons, and on dry exposed situations. I have found that when these conditions occur (say in April and May,) such leaves are covered with a very minute parasite that belongs to the family of mites. So far as I can discover this pest is new to the literature of Assam blights. I do not say that it is exclusively the cause of the paleness in the Assam plant (for it is naturally pale coloured), but simply that I have never seen very

pale Assam tea without this pest. It is in fact all but universal on the Assam pure jats, and often makes plots of exceptionally good tea look mottled from the alternation of diseased and healthy bushes, or whole patches may have turned pinkish yellow. So far I have not found it on China or Hybrid. Now if it be confirmed by future observers that the flushing of the purer jat teas is retarded by this pest, Adhatoda will be admitted as asuming a new interest when I add that so far as my experiments go, it not only kills the mite, but the plants after one or two applications become bright green in colour and give indications of flushing. My experiments have not, however, been carried to the extent of demonstrating that the plants will flush as soon as the mite is killed, though they justify me in the expectation that this may possibly be found to be the case.

UNCOMPLETED EXPERIMENTS.

Besides being fatal to all mites the insecticide has proved invaluable in the hands of some planters against white ants. So far, however, I am disappointed with the results of my investigations into the subject of Adhatoda, but mainly because while moving from garden to garden I have not had the time to personally supervise the experiments that should be undertaken. It is on this account that I recommend that we should not too readily abandon the subject, since no insecticide possesses the advantages of Adhatoda, provided it can be proved to be a poison of the required potency.

BLIGHT-PROOF SEED.

But I would add that I am more than ever convinced that the pests of the tea plant are never likely to be destroyed by insecticides. Such treatment may assist, the more so when blights do not assume gigantic proportions. The subject will have to be dealt with on more general principles, such as improvements in the system of cultivation, more careful selection of seed, especially the production of blight-proof seed, and an extended study into the life histories of the blights, so as to put us in a position to deal with them at the stage in their lives at which they are weakest.—*Civil and Military Gazette.*

TEA BLIGHT IN ASSAM.

One of the most important results of Dr. Watt's recent deputation to Assam with reference to tea blight has been to convince the planters that, as Mr. Buckingham says, "there is as much to be learned on the subject of proper cultivation of the plant as in that of the remedy of actual blights." The Assam branch of the Indian Tea Association has approached the Government with a request that it will supervise the scientific labours of a chemist whom it is proposed to bring out with a view to his devoting several years to a thorough investigation of the chemical properties of the plant. It is felt that the Government of India is best qualified to select the most capable man for this undertaking, and in order that his work may be efficiently supervised it is proposed that he should be associated with one of the scientific departments. The Association is willing to pay his salary upon the understanding that the result of his investigations becomes its property.—*Englishman.*

A TEA EXPERT WANTED.

At the annual meeting of the General Committee of the Assam Branch Indian Tea Association, held last month, we notice that the question of the appointment of a scientific officer for the tea districts was discussed. We append for the benefit of our home readers the memorandum on the subject to be submitted to the Government of India. "The tea industry having for some years past felt the necessity of a thorough scientific investigation into the chemistry of the tea plant and its cultivation and manufacture desires to bring the matter before the Government of India for consideration and such co-operation as may be found possible. It is understood that in a kindred subject—viz., investigation connected with silk—such co-operation, and even pecuniary support, has actually been rendered by the Governments of India and Bengal. It is accordingly felt that the support, not only of the Government of India, but also of local Governments, where tea cultivation is pursued, might reasonably be extended to an industry of such magnitude and importance. The Tea Association fully appreciates, the assistance which the Government of India have rendered. and are still rendering, in the deputation of Dr. Watt, the Reporter on Economic Products, to investigate into the subject of tea blights. Without anticipating the report which Dr. Watt is likely to publish, it may be said that he has convinced the planters in the districts visited that there is as much to be learnt on the subject of proper cultivation of the plant as in that of the remedy of actual blights. But this involves a scientific investigation mainly of a chemical nature, which the planting industry, unaided, is unable to accomplish, not so much financially as in proper control and supervision of the operations of a scientific officer. It is contemplated that a chemist of established reputation should be brought out to this country, for a fixed term of years, say five, to receive such salary as would ensure his devoting his entire energy to this enquiry, but on the distinct understanding that the result of his investigations should be the property of the Association. The selection of such an officer it is felt that the Government of India would be better qualified to make than the Association. The direct assistance which the Government of India, it is believed, could render would be in the equipment of a laboratory, since the apparatus required might be utilised by Government in its chemical laboratories, at the close of the contemplated investigation. It is also suggested that the major portion of the apparatus and chemicals might even be lent for the purpose here indicated. In venturing to suggest direct aid, the Association considers that supervision of chemical inquiries is of the greatest importance, and for this purpose the chemical officer might be associated with one of the scientific departments of the Government of India. This Association believes that the desired aim of the investigation might be frustrated through a scientific officer not being supervised, there being the liabilities of his attention being diverted from the main points at issue. But, in venturing to make this suggestion, the Tea Association desires mainly to obtain an expression of opinion from the Government of India, and the final scheme may be matured hereafter."—*H. & C. Mail.*

THE KOLA NUT AND ITS PROPERTIES.

The introduction of the kola nut is comparatively of recent date, and as a marketable commodity its advent here is somewhat of a novelty; but it clearly has a future as an article of commerce. Its remarkable invigorating qualities have been much talked about. By use of the kola it is stated that the burden which could only be borne by eight Brazilian negroes can easily be carried by four African negroes. According to Dr. Gustave Le Bon, who has devoted some attention to the nut and its properties in the *Revue Scientifique* the introduction of kola is only of recent date. From a chemical standpoint, the composition of the nut is still imperfectly known; from a physiological standpoint its effects have varied very considerably. When the grains of the kola tree first came to Europe, chemists submitted them to analysis, and as large quantities of caffeine were found, it was naturally supposed that caffeine was the active principle of the kola, and that, therefore, it was much more simple to substitute this alkaloid for it. Maintained at the French Academy of Medicine by the high authority of M. Germain See, this opinion naturally retarded for a long time, at any rate in France, the judicious use of the kola. The question of the principles to which the kola nut owns its properties has provoked numerous inquiries, and many results have been obtained by different experiments. The most important analyses are those published by Heckel. He

found in the kola nut 2·35 grammes per cent. of kaffeine and ·023 grammes per cent. of theobroma. The original part of the analysis of Heckel was to establish a particular body; the red colour of the kola, which exists in the proportion of 1·3 per cent. in the nut, he obtained by treating with water the alcoholic solution of the kola, but did not succeed in defining its chemical constitution. Having seen by experience that caffeine alone would not replace the kola nut, and finding in it no other substance than caffeine, theobroma, and the red portion of the nut, Heckel was led to suppose that to this red portion of the kola was due in great part the action of the nut. A chemist of Orlongen has maintained that the red of the kola nut was a glucoside, susceptible of decomposition in the presence of water into caffeine and a colouring substance. The red of the kola nut, under the influence of mastication, is transformed in a great part into caffeine when it arrives in the stomach. Heckel cites in support of his experiments upon man investigations in the laboratory, which show that the kola increases and prolongs the intensities of the muscular contractions, while with the caffeine the stimulation is of very short duration and wears itself out very rapidly. For those who desire to make use of the kola nut the advice is given to consume it exactly as do the African negroes—that is to say by masticating slowly fragments of the fresh nuts, and to reject completely all other preparations. Fresh nuts are to be taken in preference to dried nuts, as the last are valued little by the negroes and are produced from a very inferior variety of the kola. Nothing is easier than to obtain fresh nuts when required, for medical or other purposes, from the coasts of Africa, at a cost of two or three francs a kilogramme, and to preserve them in this condition for a long time. They have been kept for more than six months by simply covering them with moist leaves, and by rolling them up in sugar, or some saccharine preparation, they may be kept for a much longer time than this. Fresh nuts, by reason of their characteristic appearance, cannot be adulterated, whereas when they are dried it is impossible to recognise by their appearance the true kola from the false. The negroes frequently substitute spurious kolas for the true ones, and the former belong to a very different family, containing no trace of alkaloids.—*H.& C. Mail.*

COCONUT AND OTHER CULTIVATION IN CHILAW AND PUTTALAM DISTRICTS.

(From a Colombo writer.)

Rain has not fallen over Chilaw, for the last few months and every thing looks parched up and dry. Coconut trees have however not been affected and the hardy tobacco plants look green and flourishing, but tobacco is planted on small patches of land and every shrub is daily watered. There is in most parts of the district no grass at all and cattle are fed with plantain and coconut leaves. Coconut cultivation is extending on all sides, Mr. Baur has over 400 acres under cultivation and bids fair to be one of the largest proprietors in the district. As much as R100 has been lately paid for good forest land. There are yet large tracts of land available for cultivation. There is just a little fever prevalent in some parts of the district but the people who suffer have in most cases to thank themselves for it. One 'intelligent native" especially eschews quinine and has built his bungalow on the bank of a river! He is a firm believer in an Indian quack remedy in which quinine forms no part! The writer advised him to try quinine and run up an upstair bungalow as far away from the river as possible, and it is to be hoped that his advice will be taken. It is surprising how people will not take the most ordinary precautions. The climate is not always to blame. The water is as a rule always bad, but yet very few think of boiling it before drinking. Young Drieberg who superintends Mr. Baur's group of estates has never known a day's illness all the time he has been in the district.

Mr. Thorburn, the hard-working Assistant Agent, it is expected will go up shortly to Kandy as Office Assistant and Fiscal being re-placed by Mr. Noyes. Mr. Carberry is doing good work as Magistrate at Chilaw, and sits for a week, a month at Marawilla. Mr. Lovering is under orders to proceed to Bandarawella after a turn in a fever district. Some portions of the road are a bit cut up and certainly the coach service leaves much room for improvement. The Postmasters along the road seem to be a sleepy lot, and the time occupied in the delivery of the mail bags seem to be altogether absurd. Last but not least, Chilaw boasts of a club with a first-class billiard table, and visitors from the Metropolis have no reason to complain of the warmth of their reception in the land of coconut.

CEYLON SEASON REPORTS FOR AUGUST.

The abstract of season reports for the month ended August 31st is published in the *Gazette*. The condition of paddy crops and harvest throughout the island is generally satisfactory, but Hapitigam Korale reports that some fields have suffered from drought. Cattle disease is reported from several districts, while in some places the spread of the disease has been effectually suppressed. Fever, dysentry, chicken-pox and measles have been prevalent in the Galle district and many deaths have occurred. Hambantota reports fever and dysentry; and Badulla, cholera, dysentry and fever. The health of the inhabitants in other districts is fair.

THE TEA ROLLER CASE.

An application was mabe today before their lordships in the Appeal Court, on behalf of the defendants and appellants to withdraw the R3,000 deposited as security for costs that would be incurred by the respondents in the hearing of the appeal before the Privy Council, The appellants having been successful in their appeal, the application to draw the deposit was allowed.

IVORY, SPICES, AND BARK.

The statements about the African elephant becoming extinct must be all bosh. So one thinks as one enters another warehouse, the ground floor of which is devoted entirely to ivory. One of the quarterly sales had just concluded, and at least 120 tons of the valuable material was lying about in "lots." India and Africa are the ivory exporting countries. The best quality comes from Zanzibar, and is remarkable for its density and whiteness. That which is sent from the Soudan has often been buried for years, and frequently gets damaged. Sometimes when it "cracks" in the warehouse it "goes off like a gun," and fetches of course a lower price than some of the other kinds. That from the West Coast, also, is not of first-rate quality, being worth about half that from Zanzibar. The ivory imported is of all shapes and sizes. One big tusk weighed 137 pounds, and was considerably over six feet in length. Tusks of the rhinoceros, teeth of the hippopotamus, are also found here, and many other animals, such as the walrus, the narwhal, the sperm whale, also possess teeth or tusks which are imported in quantities, and which can be used for purposes in the arts for which true ivory is employed. Altogether, the ivory at the docks is an interesting sight, and an inspection of it might throw some light on more than one of the vexed problems of Central Africa. —*Westminster Gazette.*

NORTH TRAVANCORE PLANTING INDUSTRY.—Elsewhere will be found full and interesting information respecting the condition and prospects of the North Travancore district, in which both tea and coffee are likely to make a brave show through the enterprise of Messrs. Finlay, Muir & Co.'s Syndicate in the next few years.

COMPANIES AND SHARES: A CALL FOR CAUTION IN CEYLON.

The pace altogether in Colombo, we are assured, is getting too fast, and while there is yet time it would be well for the public to pause and consider the future. "Hastening to be rich" is a habit with a long pedigree, and a bad reputation. Even in the childhood of the world, when there were only flocks and grain to deal in, the wise and experienced of that age lifted up their voice against it as a snare; and to the more civilized nations of today with their Bourses and Stock Exchanges, this race for riches which has too often ended in crashes and disaster, has been proved to thousands over and over again, to be a way of life hard in the extreme and full of pitfalls.

But then there is, undoubtedly, excitement in it, and often much self-satisfaction. Everybody—in the slang of the day—thinks himself so knowing, and as having got a "tip" which he feels sure will "land him the coin." Besides that, he knows somebody who has put him "up to the ropes," and got him "into the swim;" and although it often turns out that this esoteric knowledge is but poor stuff, and the expected reward eludes these enlightened ones in the end, still human nature is hopeful, and often thinks more of what may be, than of what is. In this way, speculation is fostered, and when once a community is properly inoculated, and has gone fully in for this species of madness, one does not require to be able to forecast how it will all end.

In Ceylon there has always been speculation more or less, much of it of a legitimate kind —the risks that a man must take when he follows his regular business. But since the advent of Tea Companies and a Local Share Market, which gives every facility for the transferring of scrip, "dabbling in stock" has become, we are told, common among almost every class of the community with any cash to spare, and to make money on the chances of the market, is now, we are assured, one of the absorbing aims of life, at any rate among not a few members of the business and planting communities. It is under these circumstances that we are asked to give a word of warning in our editorial columns and to place the danger before the Colony, of overdoing "speculation in shares" in a forcible light. At the same time we are aware there is another side to much of the criticism offered to us, and therefore, after continuing to give the one side of the shield as depicted to us by pessimistic critics, we shall endeavour as well to bring into relief the other side with the views of those who, it may be, are sanguine if not optimistic. We are told then, on the one hand, that because, within the last six months or so, prices of almost all the tea stocks have risen, and some have gone up with a bound, investors have in some cases nearly doubled their capital. Further that now we have a very feverish state of affairs with a marked tendency to inflation of prices and an excited number anxious to share in the spoil, whose blood—our critic warns us—is at too high a temperature for them to be able either to think or act with ordinary caution. Reports of the local Share Market, it is added, too clearly show that Tea Companies' scrip s now becoming a thing to speculate or even gamble with rather than a medium for honest investment: and many who know nothing of the real position of affairs, put their money down with the sole intention of lifting it ere very long, plus what the wisdom or unwisdom of others may have added thereto. "It's a queer thing if I can't find a bigger fool than myself," is how a deal at a fancy price is supported; and while the "boom" is on, the bigger fool is supposed to be sure to turn up and offer an enhanced rate. What has been said of tea shares, applies, it is urged by the pessimistic, to Company formation. Companies are springing up like mushrooms; and in a late report, the local Share Market is said to be "a trifle weaker" owing "to the amount of capital required for new Companies just incorporated, and being now negotiated." High values are offered for estates, and when the Company has been formed, and the shares placed on the market, a rush sets in, and before results have had time to be shown, shares are at a premium, and a new race in speculation is inaugurated. What then, says the critic, is all this sort of thing going to lead to? We hold as strongly as any one in our midst, the soundness of the Tea Industry; but, our pessimistic friends assure us that no kind of business can afford to be treated in this way, without a day of reckoning having to be faced. Then it is alleged that although it is some time since the local banks took alarm, and placed their ban upon Tea Company scrip: yet that the effect has been not to check speculation but to send the men borrowing elsewhere. The condition of affairs is therefore depicted as a wild hurly-burly altogether, and while it is yet time, the public are warned to be cautious. The reaction is sure to come, and when the present unhealthy excitement has exhausted itself, and the mad carnival is over, there will be to many a retrospect which is unsatisfactory; the fragments to be gathered up will be of a sorry nature and worst of all, there will be "the mischief to pay."

All this is calculated to sober the least thoughtful amongst us and to cause them to ponder whether the present is a healthy condition of affairs in our local Share Market. At the same time, it is impossible to deny the force of certain "facts and figures" which put matters in a different light. The very fact that "scrip" is not regarded as proper security for loans, surely shows that the buyers of shares are working chiefly with their own money. Banks, we believe, only take shares as collateral security; but it is urged that every quotation in Colombo so far, may be justified on the basis of a 10—or at least 7 to 8—per cent return on the price. It is therefore insisted that the business up to date is perfectly legitimate and sound, and considering the good position of Ceylon tea, every Company so far announced, and some more to follow, can all be shewn to have a solid basis. The transfer of estates from individual proprietors to bodies of shareholders, so spreading the risk, and providing a ready investment for local savings, is considered good policy from every point of view; and more Companies are to be approved of since they afford means for the safe and profitable investment of local savings as well as of cheap money from home.

There is much, of course, in all this; but the question rem[ain]s as to the safe limit for speculation in sh[are]s. For one thing, Ceylon tea is having a s[p]ecially favourable innings this year through a bad Indian season; but that cannot be expected to continue; and therefore to base calculations as to returns on recent or present experience, can scarcely be safe in respect of coming years; and the word of "caution" is, therefore, after all necessary.

GRAPE CULTIVATION IN COLOMBO.

(*Communicated.*)

We have before referred to an experiment in grape culture that was going on in the neighbourhood of the Agricultural School in the Cinnamon Gardens. The vines were collected by Mr. Zanetti in different parts of the Central Districts of Victoria, and the cuttings taken from selected healthy plants under his supervision. Packing for transit was of course a most important matter, and particular attention had to be given to the vines during the voyage, in keeping the roots moist and at the same time preventing mildew. Ninety per cent of the rooted vines that were brought over are thriving well; the other ten per cent cannot yet be said to be total failures as they may in all probability strike from the bottom, though, of course in such cases, the crop will be delayed by two reasons. In connection with the Colombo experiment there are two nurseries. One nursery contains:—

125 Cuttings Gordo Blanco
125 ,, Champion Muscat
125 ,, Black Prince
10 ,, Lady's Finger
10 ,, Snow Muscat Ambre
10 ,, Gross Colman
10 ,, White Marillion
100 ,, Golden Chasselas

making a total of 740 cuttings.

A second nursery contains 150 cuttings chasselas (golden) 250 cuttings Muscat of Alexandra. Making a total of 400 cuttings.

The planted vineyard contains vines; two years old and under, of the same varieties as the cuttings excepting the Muscat of Alexandra, plants of which could not have been secured, and the Champion Muscat. A bundle of 50 plants of the latter variety were unfortunately stolen from Mr. Zanetti two days after their arrival in Colombo, and all attempts to trace the thieves proved unsuccessful.

The following notes the chief characters varieties that are being tried.

The Muscat of Alexandra: A very easily grown grape, very prolific, fine flavour, small bunches but well filled, generally a very good cropper in hilly land of a rocky nature where patches of loose soil are obtainable.

The Champion Muscat: does not grow very rank or strong, but is a fair cropper, very large red berries with splendid flavour.

The vineyard contains about 750 plants of the following:—

Gordo Blanco.—Vines two years old, in their first bearing, very strong grower, good cropper, large bunches, though not very well filled, fine Muscat flavour, a white grape.

Black Hambro or Hamburgh.—A medium grower, fair cropper, splendid large black berries, very sweet, bunches large and full.

Black Prince.—Rare variety, large oval black berries strong grower, but must be expected to fail to crop once every two years.

Golden Chasselas.—The earliest grape in Australia, brought over originally from the South of Spain, splendid cropper, easily grown, affects sandy soils, medium sized soft golden berries with sweet juice, large and well filled bunches. This Mr. Zanetti thinks, should be the most successful in Ceylon, and liked most for its flavour.

White Marillon or Doradillos.—Very strong grower, good cropper, though late, good sized berries of amber colour and fine flavour.

Gross Colman.—Strong prolific grower, large sized black berries, poor cropper, of very superior flavour. Vines two years old.

Snow Muscat Hambro.—Strong Muscat, good cropper, not very large berries but of very delicious flavour, very late.

Lady's Finger.—A strong grower. magnificent oval golden grape, came originally from Sicily, large bunches but loose, berries of exceptionally large size, very fleshly and of delicious flavour, hardier and more vigorous than any of the above, and all round the best. Vines two years old. The vines which were over 6 weeks out of the ground were planted during the first week of August, and the 750 do not occupy much more than an acre. Supports have already been supplied and the vines tied on to them. Altogether the miniature vineyard of a month old presents a very pleasing sight, and it is as novel as it is interesting to see some of the little vines, two three feet in height, bearing blossom and a few actually with fruit. The experiment is one of vast importance to the Colony and will be watched with much concern by all. We heartily wish it all success.

QUININE FOR THE MILLION.

We are very pleased to find that the Ceylon Government is at length to follow that of India in a direction we have often recommended. The following is from Dr. Kynsey's Medical Report:—

"A scheme has been sanctioned by the Governor, and is in course of being introduced, for the sale at dispensaries and post-offices throughout the Island of quinine in small packets at a little over actual cost price. I anticipate that much good will result if the scheme proves a success; this valuable drug will be placed within the reach of the poorest village at trifling cost."

THE AGRICULTURAL MAGAZINE.

The following are the contents of the September number just out—I. Grape Cultivation in Ceylon. II. Laws of Ceylon relating to Agriculture. III. Labour. IV. Palmyrah Palm Products. V. Daily Produce. VI. Black Smut on Orange trees. VII. Abortion in Cows. VIII. Gambage and Benzoin. IX. A New Fruit Tree. X. Poultry Diseases. XI. Royal Commission on Tuberculosis. XII. Chemical Examination of Ceylon Plants. XIII. Vines and Live Supports. XIV. Ceylon Woods. XV. Rainfall taken at the School Agriculture during August 1895, and XVI. General Items.

Some discussion has been started in the pages of the Magazine on the subject of Grape culture—the outcome of the experiment at the School of Agriculture, where, from all reports nearly a dozen varieties of Australian vines have made a very promising start. It is to be hoped that these experiment will be the means of discovering the best varieties for grapes in Ceylon. The article on Dairy Produce is interesting, and the note on black smut on orange trees should prove of value to fruit growers. It is somewhat amusing to read of the high opinion in which the Carambola (a much despised fruit in Ceylon) is held in Australia.

NEW TEA COMPANIES.

THE CEYLON PROVINCIAL ESTATES CO., LTD.

The Memorandum and Articles of Association of the Ceylon Provincial Estates Company, Limited, are published in the *Gazette*. Among the objects for which the Company is established are—To purchase, or lease, or otherwise acquire any estate or estates, land or lands, machinery, implements, &c. in the island of Ceylon; to purchase tea leaf and (or) other raw products for manufacture, manipulation, and (or) sale; to manufacture tea leaf and (or) other raw products; to plant, grow, and produce, buy, sell, trade, and deal in tea, coffee, cinchona, cacao, cardamoms and other plants, trees, and natural products of any kind, or any of them. The nominal capital of the Company is one million rupees (R1,000,000), divided into two thousand shares of five hundred rupees (R500) each, with power to increase or decrease the capital. The following have already taken a share each:—Messrs. John Paterson, Stephen Brown, John N. Grant, F. J. de Saram, M. Bremer, Andrew Murray, and R. W. Paterson.

THE HIGH FORESTS ESTATES CO., LTD.

The *Gazette* also contains the Memorandum and Articles of Association of the High Forests Estates Company, Limited. The following are among the objects stated for which the Company is established:—

To purchase, or lease, or otherwise acquire any estate or estates, land or lands, machinery, implements, etc., of any kind whatsoever in the Island of Ceylon; to purchase tea leaf and or other raw products for manufacture, manipulation, and or sale; to manufacture tea leaf and or other products; to carry on the business of planters of tea and other products in all its branches. The nominal capital of the Company is one million rupees (R1,000,000), divided into two thousand shares of R500 each.

The following have already purchased a share each:—Messrs. G. W. Carlyon, W. Henry Figg, C. J. Donald, C. E H. Symons, A. J. Sawer, G. H. Alston, and J. Armitage Ogden.

SALE OF A KALUTARA ESTATE.

The mail has brought news of the sale of Polgahakande estate, situate in the Kalutara District, by Mr. J. Wight to The English Ceylon Produce Company, Limited, for £5,750. There are 201 acres of tea and 69 acres of reserve. We never heard of this Company—it must be another new one?

THE CANTON TEA TRADE.

The Canton tea trade, season 1894-95, has proved fairly remunerative. Declining exchange has enabled shippers to lay down their purchases on the London market at a low and continually lower cost. This, combined with a considerable falling-off in production (the natives having lost money steadily of late years), has helped importers in feeding the greatly reduced demand at prices that have paid them as a rule, if only in a small way. Ten years ago the season's exports from these waters amounted to nearly 20,000,000 lb.; it is now less than 10,000,000 lb. The bulk of this is scented tea used for mixing purposes; but the natural pungency of Indian and Ceylon products is the cause of its going out of fashion. Little is now required, and that only if very cheap. The trade is dying out. Taxation is not likely to be less; exchange has risen; and the rate of freight this season is to be higher; so that prospects are altogether gloomy."—*L. and C. Express*, Aug. 23.

THE TEA TRADE.

An important point has been brought to notice by Messes. McLeod & Co., in which the Ceylon tea shipper has hitherto had the advantage over his Indian competitor in the American and Canadian markets. We refer to the factory bulking and marking of teas on the chests. This, it seems the Ceylon planters have already attended to; but Indian gardens have often neglected it, though some large firms in America already make the bulking and tarring a *sine qua non*, and others give the preference to chests so dealt with. The matter is being taken up by the Indian Tea Association, who are circulating a minute on the subject, and now that attention has been called, it should not be difficult to remedy.—*Indian Daily News*.

ACACIA CATECHU.

Preparation of dark Catechu, or, as in trade, it is more correctly designated Cutch.

The trees that yield this substance are regarded as mature when about a foot in diameter. They are then felled and cut up into blocks two or three feet long. In some parts of the country the natives ascertain whether it will pay to cut the trees, by making a small notch into the heart-wood. Trees between twenty-five and thirty years old are regarded as best suited and are said to yield more or less according to the number of white lines perceived in the heart-wood. The bark and the outer sap wood are generally removed and rejected. The red heart-wood is then cut up into small chips. In certain districts the branches are not utilized in the preparation of the extract, in others they are so used.

The chips are then boiled in water in earthen pots for twelve hours. When the water is reduced by one-half, the chips are taken out and the liquid placed in large iron pans or cauldrons and again boiled and stirred till it attains the consistency of syrup. The cauldrons are then taken off the fire and the stirring of the liquid continued till the mass is cool enough to be handled, when it is taken out and spread on leaves arranged within a wooden frame or mould and left for the night. In the morning the Cutch is dry and then exists as brick-like masses that each weigh 36 to 41 lb. These are broken up into pieces ready for the market.

The process of boiling and preparation of the dry extract varies considerably all over the region where the article is made, but the principle is the same as that given above, which may be said to be the Pegu system. Occasionally the chips are boiled a second time with the production of a small amount of inferior stuff. In other cases the red liquid is poured over fresh chips and again boiled.

From the widespread conviction of the necessity for stirring or beating the concentrated solution (on its being removed from the fire), it might almost be inferred that some chemical change was thereby effected similar to the oxidation produced by beating the indigo-vat solution. Thus, for example, in Baroda the decoction is strained through a blanket. For this purpose the blanket is dipped into the fluid, stirred about and then wrung out, while the blanket is being held at as great a height as possible. By this process the liquid falls through the air in a greatly divided stream or shower. And this is continued for an hour or so, the liquid being repeatedly wrung through the blanket, the trough is then covered over with a lid of split bamboos and the sediment allowed to subside. The water is then poured off and the extract cut into small cakes and allowed to dry.

In Bariya (Gujarat) the thick decoction is poured into pits, five or six feet deep, in the bottom of which baskets are placed. The liquid drains off, the chips are retained in the baskets, and the solid extract formed on the floor of the pits. This is removed and dried on leaves while exposed to the sun.

Speaking of the Pegu system, it is admitted that much difference of opinion prevails as to the value and extent necessary of the beating process. One writer says it is more of a "beating up" than stirring, "but I have never been able to ascertain what the object or effect of the process is. Cooks differ, too, in the amount of beating up that is desirable, some being satisfied with half an hour's application." It will be seen below in connection with the subject of *Kath* that a peculiar system of encouraging crystallization (which may be analogous to the beating) is considered essential.

As to the amount of Catch yielded by heart-wood, it had been stated that from 3 to 10 per cent. in weight would be a good average. In other words, one ton of timber, in the round, might be taken as yielding 250 to 300 lb. of Cutch.

The Cutch of trade appears in several forms. The Pegu variety occurs in masses with layers of leaves between the successive preparations. But Cutch is also met with in cubes of various sizes which often show the markings of leaves used in the moulds, or it occurs in sharply defined cubes or blocks from having been cut up by a string or wire run through the still plastic mass. In other cases it is sold in rounded balls or flattened cakes made in the hand.

In colour it is externally of a rusty brown, internally a dirty orange to dark liver-colour, and in some cases almost black or port-wine coloured. It is inodorous, but has an astringent bitter taste, followed by a sense of sweetness. It is brittle and breaks with a more or less resinous, shining fracture.

Having regard to the results of the several experiments which I have made, I draw the following conclusions:—

1. That whether the Catch extraction be performed by the native or in a factory, the wood should be preferably reduced to thin shavings.

2. That as little water be used as may be, ten parts or perhaps less would suffice.

3. That the boiling be continued for half an hour only.—*Agricultural Ledger*.

Correspondence.

To the Editor.

COFFEE IN SUMATRA.

Aug. 16.

[*To the Editor of the Deli "Courant."*]

SIR,—In a recent issue you stated that the rush for coffee in Serdang existed only in the imagination of the writer of the articles which have recently appeared in the *Ceylon Observer*.

Permit me to inform you of the following facts. Six months ago there were in Serdang seven contracts going begging, aggregating 25,000 bouws.*

All these have now been taken up for the cultivation of Liberian Coffee.

I enclose my card, and am,

THE SUMATRA CORRESPONDENT OF THE "*CEYLON OBSERVER.*"

THE CACAO, COCOA OR CHOCOLATE TREE—"THEOBROMA CACAO"—IN ITS NATIVE COUNTRY.

Victor Park, Corstorphine, near Edinburgh, N.B.

SIR,—This remarkable tree the beans of which yield the most valuable beverage known, is a native of the hottest parts of tropical America, being found growing wild in the Republics of Ecuador, Colombia, Venezuela and Brazil. When travelling in those regions I observed that two distinct sorts of trees which might be regarded as separate species produced the Cocoa of commerce. One of these of low habit from 15 to 20 feet in height is the variety cultivated to the greatest extent in the Spanish Republics, the West Indian islands and Ceylon. It appears, at least in its native habitat, to bear most abundantly on the more slender boughs and branches which crown the trees; with some fruits, however, on the trunks also. The fruits are moderate in size but the beans they contain, although not numerous, are often large and fine. This variety is considered richest in quality and may be seen growing up to an elevation of 3,000 feet. Contrary to the statements of various persons the tree thrives well by irrigation. Some of the finest cocoa grown in South America is obtained from plantations cultivated by this method. I have seen in Colombia several aqueducts for irrigating cocoa plantations which had been originally constructed by the Indians before the discovery of America.

The other variety which sometimes shoots up to a height of thirty to forty feet is of far more robust growth and dense vigorous habit and yields twice or more the number of beans. This is the sort for planting in India, Ceylon, and the East generally, but only in the low-lying and hottest situations. The fruit which is dispersed on the trunk and larger and smaller boughs is at first streaked with yellow and purple, finally becoming totally a pale golden colour when perfectly ripe. The mature fruit much resembles in appearance a frame melon. There is an extensive coast region of India and Ceylon bordering on the brim of the ocean in great part overgrown with wild forest which would be found well adapted for the cultivation of this superb variety of cacao tree. The same remark applies to many portions of land on the banks of the Irrawaddy and Southern Burmah.

It is singular that this large robust and prolific sort of cacao has not been identified by any of the botanical writers on the flora of South America. This is explained by the fact that botanical collectors invariably aim at the acquisition of the greatest possible number of species without devoting much inquiry about the plants cultivated by the natives of the countries in which they travel.

Of the value of cocoa as a beverage when prepared pure, it might almost be difficult to say too much in its favour. In the densely humid debilitating hot regions no other description of food is found so supporting and nutritive as the native prepared chocolate.

The Indian tribes inhabiting the vast forest domain of the eastern Cordillera of Colombia and Ecuador will travel long fatiguing journeys for several days in succession with no other support than a moderate sized bag of cocoa beans. Those beans are, of course, in a raw state, the shell being removed by the hand and eaten while travelling. In the Spanish Republics the successful leaders of GUERRILLAS who have often overturned and replaced Governments in those countries frequently owed as much of their success to a good supply of chocolate in their undertakings, as they did to their shrewd strategy and knowledge of mountain paths and local influences.

Since 1860 the use of cocoa in the United States has increased more than six-fold while that of tea and coffee within the same period has not quite doubled. The annual consumption in France amounts to 26,000,000 lb., Spain 16,000,000 lb., Great Britain and Ireland 14,000,000 lb. Apart from the consumption of this product by the different countries of Europe we have that of the whole of the Central and South American Republics—from Mexico to Paraguay—more than half a continent—whose chief beverage is undoubtedly chocolate.

In conclusion I trust that these remarks regarding the large growing prolific variety of cacao tree of South America as yet unknown to cultivators or planters of this tree in either Ceylon, Africa or the West Indian islands may not be without interest to your readers.—I am, sir, yours obediently,

ROBERT CROSS.

HYDRAULIC LIMESTONE AT JAFFNA.

Jaffna, Aug. 20.

SIR,—The article on the above subject on page 132 attracted much attention here. If it is the same stone from which lime was prepared some time ago, under the auspices of the Government Agent at the Kalumunai point, for use at the reclamation road at the Jaffna lagoon, off Karioor, it certainly abounds in several places in the Jaffna Peninsula. The stone varies in consistency in different places, from the hard stone fit for building purposes, to the fine gravel dust used in levelling and smoothing of our roads. However stones exactly similar to that found at Kalumunai Point are met with in several parts of Jaffna, along the sea coast as well in the interior, almost to an unlimited extent, and our workmen would be able to supply the stone at very low prices, at a cent a bushel, as they would calculate upon converting the ground into good garden land, by filling up the hollow places with earth after the stone is removed.

The chief item of expense in the preparation of lime with this stone would be that of firewood. There is hardly any wood fit to be used as firewood worth mentioning in Jaffna. However a forest officer of some standing in Jaffna lately said that the Wanny part which is estimated to be of some 500 square miles in extent, abounds with decaying firewood timber which can advantageously be cut and removed, and the undergrowth allowed to attain maturity and expansion; can this firewood be availed of? and even if it can be, how can the firewood and stone be placed in proximity to each other. They are now lying at a considerable distance from each other. Can the contemplated railway or even the tramway be made to do service either to convey the firewood to a convenient place at Jaffna, or the stone to a similar place at the Wanny. If this is done, cheap lime can be had in any quantity for building purposes or for making cement.

The Government Agent of the Province is just now in Colombo, on his annual visit to the metropolis, and there is not another man in all Jaffna whether native or European who knows more about these two points of firewood and stone, than he;

* 25,000 Bouws—43,750 acres.

and he would be glad to furnish information, especially as the palmirah fibre industry which he at one time encouraged is fast dying out; and hundreds of people in the interior villages of Jaffna who used to make a living out of it are thrown out of employment.

With their numerous buildings, cheap lime is a great desideratum in Colombo and Kandy, not to mention the other towns which are rising into importance. Already there is a thriving trade between Jaffna and the Ports of Chilaw, Calpentyn, Puttalam, &c. in lime, and the trade would speedly develope if the supply could be maintained at a reduced rate. The valuo now paid for lime in the above ports is enormous, almost triplo of what it costs in Jaffna.—Yours faithfully, PRO BONO PUBLICO.

PHYSIOLOGY OF THE CIRCULATION IN PLANTS.—CAMPHOR TREES IN SOUTHERN INDIA.

South India, Aug. 22.

Dear Sir,—Will you kindly allow me the opportunity of commending to the notice of my brother planters a suggestive book called "The Physiology of the Circulation in Plants, in the lower animals and in man." This book comprehends a series of lectures delivered at the Royal College of Surgeons. Would it not be helpful if you devoted a column regularly to the review of any works that may appear from time to time that are likely to be helpful to planters by throwing side-lights perhaps on important agricultural questions. The title of the book mentioned may not appear likely to promise any practical help. But if wo are to acquire a thorough knowledge of the laws of health and vigour in plants we must begin systematically at the beginning and surely a thorough acquaintance with the various processes in the normal circulation of the sap in plants, may be considered to be almost the first essential. Before meeting with this book I had come to the conclusion that the circulation of sap in plants, and the resulting processes of nutrition, could not be thoroughly, and intelligently understood apart from some insight into the processes of the circulation of the blood in animals and in man, for an insight into the one helps to elucidate the other, as there is a striking analogy between all the processes of circulation in plant, animal and man.

I imagine I hear some practical man incredulously exclaim: "How on earth can there be any analogy between a plant that takes up its sap mechanically by its roots, and the intricate organs of the animal and human body?" Such a man however is too practical to be aware of the fact that the villi of the animal and human intestines are exactly analogons to the roots of plants, and performexactly the same offico interiorly that the root does exteriorly.

Of course with each rise in the scale of organization tho construction of each organ is increasingly elaborate and complicate, but the principle in all remains the same. When we bear in mind that the very same law of osmoses that govern the transmission of the sap through tho mombranes of the cellular tissue of plants, also controls the transmission of the blood through tho membranes of the cellular tissue of tho human body, we begin to apprehend how close the relationship must be. In the volume under remark, there is collected a vast amount of information regarding the various processes of plant life, which has been carefully culled from the works of tho best authorities—specially from our great lion Herbert Spencer, but unfortunately many erroneous statements have been perpetuated in its pages such as the theory of the *capillary* ascent of the sap. However it is correctly stated that the ascent of tho sap is also governed by the law of the diffusion of liquids, or fluids. The editor however seems to bo ignorant of the fact that the principal factor that controls the ascent of the sap is the rarification of the air within the intercellular spaces of the plant, in the presence of light and sunshine. The editor contonds that thero are two *principal* currents of sap in plants. That a downwar diffusion of sap is needed in order to store up the contents of the sap within the bark, &c. in autumn, is evident, but to affirm the existence of a *continuous* downward current is unwarrantable.

The circulation of tho sap in plants cannot be altogether compared with the circulation of the blood, as the sap is of varying density and composition in different parts of the same plants. In the stem near the roots, for instance, the sap is in a diluted state, whereas in the leaves it is considerably thickened by the evaporation of a large percentage of its contained moisture. Of course the editor might here refer me to the density of the contents of the chyle ducts in the human body, but that is just the reverso of the conditions in plants. Again the author has perpetuatod the error that the stomata of plants close in dry weather and open in wet! The fact is that the opening of the stomata depends chiefly upon the degree of pressure exerted upon the guard cells by the aqueous vapour within according to its varying density. The author also seems to be unaware that leaves possess both air stomata and water stomata. The air stomata under the leaves and the water stomata along the margin of the leaf. Early in the morning of a warm day large drops of moisture may be noticed on the margin of some loaves, which one would be apt to call dew, but is really water excreted by the water ducts.

But I have not time at present to add more to these hasty remarks. Perhaps I may be permitted another opportunity of doing so. Meanwhile I would only add that the caroful study of a book of this kind will give the clue to much that is obscure and perplexing, in our study of plant life.

With reference to the cultivation of Camphor. The Camphor trees I have grown here although of vigorous growth show a tendency towards a *bushy* habit of growth instead of making a clear stem. The same tendency is observable in the Camphor trees growing in the Botanical Gardens at Ootacamund. May I enquire whether it is the same in Ceylon?—Yours faithfully, J. McKENZIE.

"LADY-BIRD" BEETLES AND MR. E. E. GREEN'S EXPERIMENTS.

Mote Hall, Bearsted, Kent, August 23.

Dear Sir,—I learn from your last issue of the *Tropical Agriculturist* just to hand, that the parcel of "lady-bird" beetles has at last turned up, but that the beetles themselves were all dead. Mr. Bagot considers this failure to be due to the fact that they were packed in closed boxes. But I think that the long and inexplicable delay in transit is the real cause. It is a mistake to suppose that insects require a large amount of air. They will generally obtain a sufficient supply through the natural crevices between the lid and the box. In fact in my experience of the receipt of living insects by post, I have more frequently had to complain of over-ventilation, leading either to the escape of the insects or the drying up of the food plant. In the case of the "lady-bird" beetles from California, Mr. Crow has had a large experience in sending these insects to various parts of the world. He despatched them in the full fed larval stage with a sufficiency of food to last them until they had pupated. It was calculated that the beetles would be hatching out about the time of their arrival in Ceylon. But a delay of about three weeks naturally upset these calculations. Perhaps it would be advisable on another occasion to have the parcel consigned to the U.S. Consul. It might come with less delay in the official mail bag.

Did Mr. Bagot examine the cotton wool or any *débris* in the boxes? This would probably have contained eggs laid by the beetles before dying, and a brood of young larvæ might have been raised from them. Yours very truly,

E. ERNEST GREEN.

FRUIT CULTIVATION IN CEYLON.

Aug. 30th.

Dear Sir,—Your correspondent who invites growers of oranges to send them down to Colombo, as he pays nine cents a piece, is unaware that there would be probably no profit to the grower.

It is my experience that all fruits which the grower cannot retail himself leave very little profit if any. even when grown with another standard product. This is the case even with plantains, which I have had more than once to sell at a loss, owing to rings formed by middlemen who, as a rule, make no less than cent per cent.

There are other reasons which make fruit *cultivation* a failure, that is that contractors for hotels and the shipping have no standard of quality to furnish and the Colombo residents are at the mercy of their Appoos! I have never seen in the hotels or in private houses of Colombo any prime fruit of the classes which can be cultivated. A look at the Colombo market is sufficient to prove my assertion,—Yours truly, A. V. D. P.

[For profit, fruit must be cultivated on a considerable scale for *export* to London; and we trust Messrs. Smith. Pearson and their friends will be able to give a fair trial to oranges and lemons.—Ed. *T.A.*]

CINNAMON CHIPS: RISE IN PRICE.

Negombo, Sept. 4.

Dear Sir,—Can you or any of your readers account for the unprecedented rise in the price of cinnamon chips this season? In one of your recent issues I find it stated that the price had gone up to R65 per candy, delivered at Colombo, I believe, you will be surprised to hear that the chips of Kimbulpitiya estate in Kadirane, belonging to Mr. Schrader of Western Seaton fetched R67 per candy. Golua Pokuna estate following closely with R66.—Yours truly, CHIPS.

TEA ENEMIES AND REMEDIES.

Kandy, Sept. 7.

Sir,—With reference to the advertisement that has been appearing for some time now in the *Ceylon Observer* of the Chiswick Compound and Spraying Machines, we think it may be of public interest to know that there is not the slightest doubt as to the successful results that are being obtained. The following reports from three tea estates in India have been received by a recent mail and bear out many earlier reports:—

Reports from three Tea Estates referred to.—1. Red spider has been bad, but is now disappearing as the monsoon has broken. Chiswick Compound is invaluable for this disease, a couple of applications generally being sufficient to eradicate all trace of the disease.

2. Blight was noticed rather early in odd spots, and the spraying machines were put to play on it promptly, and during the fine weather 10 machines were working every day and have been successful in keeping it under, and preventing much increase.

3. Blight. The trees are wonderfully free from blight notably on the cut down. Insects are caught and the spraying machines do a great deal of good. Blight is very slightly noticeable on one tillah of No. 5 and it is also to be found on some of the tillahs of No. 6, but otherwise there is practically nothing. Orange beetles have done a certain amount of damage but red spider has not been so bad as last year.—We are, sir, yours faithfully,

A. PHILIP & CO., Agents.

TEA AND ITS CHEMICAL AND PHYSIOLOGICAL ACTION.

Talawakele, Aug. 23.

Sir,—I read with much interest the account appearing in the local "Times" of H. H. C's. interview with Mr. Rogers of tea tabloid fame. I would beg to point out that some five or six months ago I drew the attention of your readers to the fact that it was not to the tannin in tea that the bitterness was due. In my experiments on the action of tea on the digestive system I have satisfied myself that the tannin is not so injurious to the digestive organs as many people make out. When introduced into the stomach it does not act, as is supposed by many, by tanning the mucous membrane of the stomach. It attacks the soluble albumen, or peptones, and is precipitated in the form of an insoluble peptone. This insoluble peptone acts mechanically only in retarding digestion. I find that there is no difference in the time required to digest meat fibre, to which infusions of tea have been added, the infusions vary from five to thirty minutes. Seven different glass tubes were used:

No. I. contained meat fibre & digestive fluid.		
,, II.	,,	tea 5 m. inf.
,, III.	,,	,, 10 ,,
,, IV.	,,	,, 15 ,,
,, V.	,,	,, 20 ,,
,, VI.	,,	,, 25 ,,
,, VII.	,,	,, 30 ,,

No. I. was the control experiment. The time in each case being noted, it was found that the five minutes infusion required the same time as the thirty minutes. I then repeated the experiment, but removed tannin from the tea with gelatine, and found no appreciable difference in the time occupied in the digestion of the fluid "sine" tannin and that with the tannin present. On removing the tannin from the five minutes infusion the bitterness was not perceptible, while, in the 10·30 minutes infusions it increased in proportion to the length of time infused. I have been able to isolate this bitter principle, and I don't agree with Mr. Rogers that it is *Crusta Tannic Acid.* It answers the tests for alkaloids, and I take it to be closely allied to "Thebaine" from what I have seen in people who use strong, boiled infusions or decoctions of tea. It is a yellowish powder. I have not delicate enough apparatus to ascertain its actual chemical formula. But I hope shortly to be able to give an account of its physiological action on the nervous system The question of the detrimental action of the tannin in tea will ere long be a thing of the past. Why do those who consume large quantities of claret and other such wines at dinner not complain of the same symptoms, as tea drinkers, when these wines contain a much greater percentage of tannin than tea does? The astringent action of wine being most marked on the mucous membrane of the mouth even. With tea the action of the tannin is more than balanced by that of the caffeine. The discussion of the action of the caffeine I shall reserve for some future occasion. It is time the medical profession knew more about the chemical and physiological action of tea. 95 per cent of them know that it is the leaf of a plant that contains tannin and caffeine, and is used very much by ladies as a mild stimulant; further than that they don't trouble themselves. Apologising for taking up so much of your valuable space.—I am, &c., P. M. SHORT.

FLUFFY TEA DUST—AND THE DEMAND THEREFOR—WHO WILL SUPPLY IT?

Talawakele, Sept. 10.

Dear Sir,—I herewith enclose a letter which may interest many tea planters.

It applies to fluffy tea dust a sample of which I sent home for valuation, after experimenting with it myself. At present it is either burnt or thrown out, in many cases it is sold to itinerant Moormen who sift out any tea that may be present. It is no uncommon sight to see heaps of it lying in the bazaars and the fanning operations being carried on. There are two serious evils, that are likely to arise from this selling fluff at the factory door. First, it affords a means of selling other teas, thereby encouraging thefts, by factory hands. Second, the tea thus sifted out is used to make up inferior tea packets for sale in the Harbour, much to the detriment of Ceylon teas. Now that it is known that this bye product has a market value, it ought to be collected in all factories, and sent down to a central depôt for baling and shipping.

The firms who are willing to buy it are well known in Ceylon, as you no doubt can testify to Mr. Editor. I am not at liberty to publish the name at present, but shall be pleased to furnish same to any firm caring to take the matter up, in the Planters' interest. A written guarantee will be given that no portion of the fluff will ever appear on the market in any form as tea.

I may say that red leaf can be put in also. Trusting that the Planters may move in the matter.—I am, dear sir, yours faithfully,

PETER M. SHORT.

Stratford, near London, E., August 8.

Peter M. Short, Esq., Talawakele, Ceylon.

Dear Sir,—We have received the sample which you sent us and we find its present value to be 3½d to 4d per lb, delivered to docks in London At this price we could take a quantity, and if you can ship 5 or 10 tons promptly we should be glad to receive same and would pay the higher price if equal to sample. Payment to be made on arrival here.—We remain, yours faithfully, ———

[Please don't publish firm's name at present.—P.M.S.]

COOLY SANITATION.

Sir,—I noted your letter in the August *Tropical Agriculturist* in which this subject is handled, and reference has made to the unearned reward offered by your former chief for the best hints on this subject.

The cooly is a creature of habit and custom: once establish a custom and he will hold by it; he also readily conforms to any prevailing customs of the place he works in.

It has been found impossible, by trial, to make coolies restrict themselves in the way of latrines, but it may be possible to bring about the desired end by the use of a little diplomacy. Elephants are shy and powerful but they are eventually driven into a stockade, (of course for their real and moral well being) but the commencement of the "drive" is very wide. Imperceptibly they are drifted rather than driven to the desired centre.

On the same principle it might answer to enclose a large area of land adjoining the lines, out-side of which any pollution should be strictly forbidden This area could be kept clean by special sweepers, the model latrine could be put up in the centre of the area, its use being optional, or merely advocated. Gradually the area could be reduced, and the latrine increased in size.

It would be used in wet weather, in fact its use would gradually become a custom. Should this system be adopted by a majority of estates which employ labour, it might have some success, but any trials on a small scale must be doomed to failure and the experimentalist would get a bad name. This plan entails time and patience, but as these two factors have already been spent without success, they might be employed again. There should be no appearance of hurry or coercion until indeed the custom is established to have become a law.

INDIAN PLANTER.

GRAPE GROWING AT 2,200 FEET IN CEYLON.

Hindugala, Peradeniya, Sept. 12.

Dear Sir,—Could any of your readers give me hints as regards grape growing at this elevation —2,200 ft.

I have a Muscat vine, from a cutting brought out nine years ago, from a *very* good vine in England, and although apparently strong and healthy it shows no signs of bearing yet.

It is planted on a sheltered sandy slope facing south-west.—Yours faithfully,

M. Q. WEBB.

[M. Zanetti is good enough to give his opinion through Mr. Drieberg as follows:—

It would be a difficult matter to account for the non-bearing of a vine without seeing it *in situ*, but the following are the most probable reasons—its strength may be exhausted by the presence of suckers; the sap may be dissipated along unnecessary branches by the vine being allowed to grow rank without proper pruning, or lastly the cutting might have been got from a "water shoot" or non-fruit-bearing one in which case there is hardly a possibility of the vine ever bearing.

We should be inclined to advise Mr. Webb to try laying bare the roots as a means of checking growth, adopted with success by the late Mr. Dyke in Jaffna, who in that way, got his vines readily to bear fruit. But Jaffna has the peculiarly dry climate in which the vine delights. —Ed. *T.A.*]

VARIOUS PLANTING NOTES.

Liberian Coffee.—A couple of firms in Nederland are endeavouring to buy up the whole Liberian coffee crop of west Java for 1896 and are prepared to pay sixty guilders per pikul.—*Daily Chronicle.*

Coffee Redivivus.—We attract attention to the very cheering account given to us to by a practical planter writing from Haputale, of the condition and prospects of our old ruling staple, on the estates that have retained an appreciable extent in cultivation. A comparatively dry season in our hill-country used always to be a good one for coffee. We congratulate the fortunate proprietors referred to, who should make a good profit, with coffee selling so well as it does now.

Dangers of Peat Litter.—In a meeting of the French Central Society of Veterinary Medicine, Mr. Railliet called attention to the dangers of peat litter as regards the propagation of intestinal parasites among horses. Having observed a veritable epidemic of worms among cavalry horses—over 250 out of 500 having, as he puts it, "their intestines literally crammed with ascarides"—he examined the turf litter used in their stables, and found in it an abundance of eggs of intestinal worms (*Acaris equorum, Oxyurus equi*) and even tenia, and he came to the conclusion that the turf litter was the hotbed of this epidemic of worms.—*L'Echo de l'Armée.*

The Extension of Tea Cultivation in Ceylon.—The following from the evening journal is a specimen of a series of unfounded statements:—

In fact, we were as good as told—and the editor of the paper (meaning the *Observer*) supported the contention—that Ceylon had seen her best days, that it had turned the corner of prosperity, and was starting on the downward track; all because the Government, falling in with the suggestions made by several District Planters' Associations, did not throw its reserve of jungle on to the market, and thereby unnecessarily increase the output of Ceylon tea.

Now the writer knows well that most of the above is from his own imagination,—that our special objection to the announcement of the Ceylon Government that it would sell no more land for "tea," was the effect it had in Northern India where an unprecedented extension in planting at once took place. Such a policy might, practically, have been followed, by only placing 2,000 to 3,000 acres a year in the market without the resulting mischief which the "Times"'s clamourous paragraphs about the wishes of Planters' Associations and the compliance of the Government, created on the minds of planters over the way. Our business has been to counteract this effect by shewing our Indian neighbours how large an area of available land there is in private hands in Ceylon—perhaps 120,000 acres, if reserves be counted.

TEA SHIPMENTS FROM AMOY.

A consular report dealing with the exports from Amoy states that the total tea export and re-export to foreign countries, which, during the year in question, as in the previous year, consisted almost entirely of Formosa Oolongs, for the period from Jan. 1st to July 31st amounted to 13,505,497lb. against 7,159,985lb. for a corresponding period last year—that is, an increase of approximately 47 per cent.

These figures, however, do not present a really accurate statement of the condition of the trade, inasmuch as a very large quantity of stock was remaining over from last year's supply, and, contrary to the usual custom of the port, considerable shipments took place in the early months of the year. The figures from the commencement of the season, up to Aug. 6th as given in a report published by the Amoy Chamber of Commerce, nevertheless showed a considerable increase in the amount of tea shipped during the season—namely, 6,543,749lb. against 5,422,840 lb. for the corresponding period in 1893. This increase of about 17 per cent was justly due to the fact that the tea season commenced somewhat earlier than usual, and also to the brisk demand in the American markets, in view of the possibility of the export being temporarily stopped should Formosa fall into the hands of the Japanese. The shipments continued to the end of the season, and the total export of tea for the year was 5,811,428 lb. in excess of last year's export, Formosa tea showing an increase of 5,246,411 lb, It will be understood how large a bulk of the tea from this port is exported to America, when it is stated that 78·49 per cent of the total tea trade was with the United States market. The quantities of the three classes of tea produced in 1894 was :—Oolong, 26,561,388 lb.; Pouchong, 1,500,108 lb.; Souchong, 18,325 lb.; total, 28,079,821 lb

LADY BLAKE OF JAMAICA

is a frequent writer in magazines. Her latest paper so far as we know is entitled "A Day in Barbadoes" published in "Timehri"—the British Guiana half-yearly journal—received by last mail. The article covers some 25 pages and is well-written ; but a considerable portion is taken up with an historical retrospect. Lady Blake does not seem to have had on this occasion a pleasant experience of voyaging or steamer. She writes :—

After crossing the Atlantic from Southampton to the West Indies—a voyage which, under the most favourable circumstances is wearisome and tedious to a degree—it must be a very morose individual indeed, who fails to be pleased with the first sight of the bright little island of Barbados, glittering with greenness, and looking like a great emerald rising out of a sapphire sea. It is a relief to look forward to an escape of even a few hours from the discomfort of the steamer, which, since the anchor has been down, have become so aggravated—what with the maddening noise of the steam winches and the unendurable heat caused by the steam being turned into the pipes that work them—that one cannot help thinking that the early Christians paid the Church a very poor compliment when they typified it as a ship ; had they been acquainted with the horrors of a modern steamer taking in cargo in Carlisle Bay, the ship would no doubt have been handed down to us as the type of the nether regions.

Before leaving the stuffy cabin where so many wretched hours have been passed, it is advisable carefully to fasten the port-hole. Boats innumerable swarm round the ships, and it is by no means uncommon for a brawny brown arm to be inserted through the cabin-window, in search of any goods or chattels that may be within reach, sometimes a thick hooked wire being used to fish up any bag or garment beyond reach of the hand. It is amusing to see the crowds of boats of all sizes and descriptions surrounding the steamer, from great barges, waiting to land cargo, to tiny little craft very much the size and shape of floating coffins, containing a couple of diving boys eagerly calling to the passengers to fling coppers to dive for. Making one's way as best one can down the ricketty ship's ladder that sways uncomfortably over the side, it is a relief to find oneself ensconced in one of the boats, and after a pull of about half a mile over the blue waters of the bay, it is delightful to find one's feet once more on solid land.

From the sea Barbados looks not unlike the "Little England," she proudly calls herself. Fields of sugar-cane seen from afar resemble pastures, numbers of wind-mills crown the gentle slopes, and clumps of trees when looked at from the distance of a couple of miles or so, appear much the same whether they be mahogany or ash, sea-grapes or alders.

The Barbadians, or "Bims" as they are sometimes termed, are often laughed at by the inhabitants of the other West India islands for their patriotic devotion to their island but they have good grounds for pride in themselves and in their little spot of earth, for though in size and scenery it can claim no pre-eminence, its history is second in interest to that of hardly any other colony, and affords many striking pictures of loyalty, pluck and energy, often displayed under circumstances of much peril and difficulty.

Then follow some 11 pages of past history, which we skip in order to get at the more interesting parts :—

Having only a few hours to spend in the island we could not hope for more than a cursory glimpse of it. It was with great pleasure we availed ourselves of the kind invitation of the Governor and Lady Hay to accompany them on an expedition by special train to the south west of the island, which as the railroad runs right across, would give us an opportunity of getting a general impression of its characteristics. The capital, Bridgetown, is clean and picturesque, no sleepy worn-out place, with weed-choked streets and lazy inhabitants, such as West Indian towns are sometimes depicted. The shops are commodious and well stocked, the hum of business is on all sides. Tram-cars run along the principal streets, which are thronged with busy, chattering crowds of men, women and children; unkempt donkeys, carrying great loads, and drays of sugar, picturesque with many mules that form the team, the drivers cracking very formidable-looking whips. The women are mostly dressed in white, their heads being bound in white handkerchiefs very becoming to their dark skins. The houses are small and low, but generally neat, and altogether the town has a thriving, contented appearance. We passed a tavern with pink walls, on which were depicted sprays of inebriated looking roses; it bore the name of the "Rose of Devon," and the petition in large letters to "Heave to."

The suburbs of Bridgetown, through which the railway runs, are not prepossessing. The houses are so small that they resemble sentry boxes more than habitations, and are many of them in a very tumble-down condition ; they are crowded closely together, and the fences and yards look shattering and neglected. Evidently the inhabitants have little cash, time or inclination to bestow on such minor matters as repairing or adorning their dwellings. Barbados is more thickly populated per acre than any other spot of earth, not excluding China. The negroes have there to encounter the hard struggle for existence from which their brethren in the other islands are exempt, and in conseqence are hard working as the sternest of political economists would desire. But the island is small, the population very large, the profits from sugar cultivation are diminishing and wages consequently are low. Barbados has all her eggs in one basket, and one cannot help wondering, when hearing of diseased cane and falling-markets, what would become of the place should any number of the estates be "thrown up." Barbados altogether gives one a different impression from that one usually expects from a West Indian island. It is not

"A place for idle eyes and ears,
A cobwebbed nook of dreams."

No land in which to eat the Lotos, and gather fruit that one has not shown; man and beast must there work their hardest, the struggle for existence is in full swing. "Little England" is

"A land of settled government,
A land of just and old renown
Where freedom broadens slowly down
From precedent to precedent."

She may e'er long have the problem before her that is pressing unpleasantly close on Old England, what is to be done with a population which, should industry cease to pay, is superabundant. It is earnestly to be hoped the leading men in the island will endeavour to find a solution to the question before it is asked by a starving population for whom no work can be found.

The interior of the island is decidedly ugly and monotonous. In all directions stretch cane-pieces, with here and there, patches of sweet potatoes, yams or guinea-corn. There are no fences; occasionally come small clumps of mahogany trees of no great size, or a line of tall, slender cabbage-palms by a road-side, looking like so many green-headed mops. Hardly a flower is to be seen, every weed is turned up and hoed into the fields as manure. In one cane-piece we saw a white overseer, mounted on a sorry nag, superintending a gang of negroes. He wore a mask over the lower part of his face. We inquired the reason, and were informed that it is "the custom in the island," a custom which has probably arisen from the fact that when white people work in the fields exposed to the sun, their lips are apt to blister, and after a time to fall away from the teeth, the face becoming scarred as if from a burn. The manual labour on the estates is all done by negroes. They are divided into three gangs. The first consist of able-bodied men who each receive 10d a day; the second gang is composed of women who are paid 8d or 9d a day; in the third gang are all the children who do light work such as weeding, for which they are paid 3d to 6d a head. These wages are not high,—accordingly to ideas in England, they are ridiculously low,—but as things are in the tropics, they are sufficient to enable the negroes to live, to multiply contentedly, and though many of them would gain double or treble if they would emigrate to the other islands, their devotion to Barbados is like that of the Irish to Ireland previous to 1848, and they will not consent to seek work elsewhere. If the life of the labourer in Barbados is one of effort, that of the animals on the estates, must be one of nearly constant suffering, for all we saw looked more than half-starved. It was pitiful to see the small stunted oxen, looking almost like anatomical specimens, toiling painfully, many of them lame, dragging their heavy loads through the cane-pieces. When the weary work is over there are no refreshing pastures into which to turn them, only pens (in the English not the Jamaican sense) in ploughed up fields, where cane tops are flung to them as scanty nourishment. We passed some of the old estate "Great Houses," two-storied and substantially built. They had no gardens, the canes came close under the windows, and the "works" were hard by.

It was not till we reached the southern shore that we realized that Barbados has a claim to her share of the heritage of beauty that is the birthright of the West Indies. The coast-line rose so as to form cliffs of a considerable height, the dazzling white surf beating on a creamy coral strand at their feet, head-land stretched beyond head-land till they melted away in the blue hazy distance. The glossy foliage of manchioneel trees growing luxuriantly on the shore; the green picturesque forms and beautiful colours of the sea-grapes that stretched their fine boughs towards the waves, as if to invigorate their copper-coloured and red-veined green leaves in the refreshing spray; while high over them towered the coconut palms, giving a tropical look to the scenery that hitherto has been absent. An oily substance was pointed out to us floating on the waves; this was petroleum. The rocks along the coast are coated with it, as it trickles down the cliffs. The hill forming one of the highest of these cliffs still bears the name of Burnt Hill; its baked red earth is sometimes brought into Bridgetown and used for making walks and paths. This hill is said to have been found burning by the early English settlers, and so remained till it burnt itself out. The tradition is that it was set on fire by the Caribs, possibly by those who came hog-hunting from St. Vincent. At present no attempt is made to work the petroleum, which perhaps may ultimately prove a much-needed second string to the Barbadian bow.

We got out of the train—which literally drew up at the door of a sea-side lodge called "Quamine's." Long ago an old freed slave called Quamine had built a shanty there, and his name is kept green by the present comfortable little fishing lodge. The coast abounds in fish of all sorts and hues. There was a stage in the surf on which a fisher could sit at ease and fish in a deep pool beyond it for grunt, snapper, parrot fish, mullet; and fish of unknown names, wonderful shapes and indescribably vivid and beautiful colours. Outside the coral reef, in the deep ocean, is where the flying-fish are taken. To capture these the sea has to be "scented" with the previous day's catch, then a line is thrown out by a fisherman and as soon as he has hooked a flying-fish, it is fastened through a small aperture in the bottom of a shallow net some three or four feet in diameter. This is placed alongside the boat and in come the fish rushing headlong after their companion, and are forthwith ladled into the boat. Flying-fish are rather dry, but taste somewhat like smelts, the roes fried is a favourite dish with Barbadian epicures. As we walked down to the beach we passed a group of copper-coloured men and stopped to speak to them. They belonged to the class known in the island as "Red-legs." Though almost resembling Red Indians in colour, they are white men by race and have not mixed with the coloured population. The fierce sun of the tropics has burnt them to the hue of bricks, but the young children are quite fair-skinned. They are the poorest of the poor, eking out a scanty livelihood as fishermen; the white race cannot do hard work in the fields and survive long, they have no land or means of obtaining any, consequently their only resource is fishing. The name "Red-legs" is said to have originated in Cromwell's time, when his English soldiers seeing northern men advancing against them clad in kilts, called out in derision "Here come the Red-legs." * * * *

The possibilities that surround the ancestors of the "Red-legs" invest the poor people with a particular interest, though of course, the origin of many of them may be anything but romantic as now-a-days the white fishermen are all called "Red-legs." Those we saw had Scotch names and all they knew of their history was that their ancestors had come from Scotland. They were tall, well-made men, but they appeared dull and spiritless, and I was struck by the listless and cramped expression of their countenances. They seemed men who had small interest in their surroundings, and little hope in life.

Our day in Barbados was drawing to a close. It was time to return to catch the steamer, so we turned with regret from a search on the tempting beach for the tiny green shells found there sometimes in abundance and took our places in the funny little train, the lines of which curve along often in unpleasantly close proximity to the edge of the cliffs. On our way back we noticed a large building surrounded by a wall. It was the prison. This stands in a district called St. Michael's, most probably what was the St. Michael's Town of former days.

Our ship was just ready to get under weigh, as we went on board. The tropic sun was sinking serenely into its ocean bed, and as we steamed westwards to the far more lovely island of our destination and watched "Little England" fading away in the distance, we heartily wished it "good-luck," and felt we should always retain a feeling of interest in the fortunes for "weal or woe" of the island whose soil has a certain sacredness on account of the sufferings and surviving of so many of our countrymen who toiled and pined and died in "Far Barbados on the Western Main."

PARASITE AGAINST PARASITE.

WHAT LADYBIRD BEETLES ARE DOING.

During recent years many workers have been studying to good purposo, so far as the agriculturist is concerned, the often curious relationship of one insect to another, or perhaps of a plant to an insect. However small it may be, every animal is sure to have some particular plant or other animal especially suited to prey upon it if it once gets the opportunity. We have before noticed how the common house fly is attacked by a fungus. In the same way other insects are liable to serve as hosts for different kinds of fungi or moulds, and as these insects are sometimes very injurious to fruit trees and crops, advantage is now taken of the fact in just the same way in which Pasteur proposed to take advantage of the liability of rabbits to disease.

More has been done in this way in America than in Australia, and the results have been in some cases wonderfully successful. In Kansas, for example, the well-known chinch bug had become a great pest when the idea occurred to the state entomologist, Mr. F. H. Snow, of fighting it by means of one of its plant enemies, a fungus. Taking one of the chinch bugs affected with fungus he confined along with it numbers of other healthy ones. These became affected, and when released in the fields carried the infection far and wide, and by this means the insect pest was kept under control. From Kansas the disease has been introduced into several other states.

In this distance we have a plant parasitie upon an animal which is itself a parasite. In other cases only animals are concerned.

Mr. Tryon, in Brisbane, has pointed out how the Moreton Bay fig tree is attacked by a small insect like a little jumping cicada, the life history of which is as follows. The insect lays its eggs upon the under surface of the leaf; the eggs are enclosed in strong leathery cases, out of which in course of time emerge little grub-like creatures. These soon begin to form a case which encloses them, and under the shelter of which they can bore their way into the soft tissues of the leaf. It is not easy to kill either the insects or the larval grub, as the former are very active and the latter only exposed for a very short time, while the eggs-cases are too thick to be penetrated by such fluids as kerosene emulsion. There is, however, another insect allied to the bee whose mission in life appears to be that of searching out the young grubs, and by means of a sharp pointed tube at the end of its body introducing its eggs right into the grub. The result is that the eggs grow at the expense of and finally kill the grub, so that here we see first an insect living as a parasite on the tree and then another insect living as a parasite on the first.

Still more interesting has been the discovery by Mr. Tryon of a special form of insect-eating insect. Though this particular insect and its habits were described in Australia by Mr. Tryon it is really better known in America than with us, owing to the fact that the Governments of the various states are far more alive to the economic importance of spending money in studying and experimenting upon such matters than we are.

There are numerous little insects which from their appearance are known as scale insects, and which do so much damage to trees, such as the orange and lemon, that if left unchecked the trees are often killed. However, fortunately for us, a natural check is close at hand; the little ladybird beetle, both in the adult and grub state, devours these scale insects by the thousand, and so effectively does it keep down the numbers that the Agricultural Department of the United States sent across an officer of the department en purpose to secure the ladybird and acclimatise it amongst the orange groves of California. It is somewhat strange to realise that the growth of oranges in California may be largely influenced by the application of knowledge derived by Mr. Tryon from the study of the life-history of so insignificant a creature as a little Australian ladybird beetle.—*Australasian.*

THE JAVA COFFEE CROP.

According to a telegram from the Governor-General of Netherlands-India, dated August 23, the Government's coffee crop in Java for this year is estimated at 338,200 piculs. It is said that there will be a deficit of 3½ million guilders on the war budget in consequence of the Lombok expedition.—*L. & C. Express*, Aug. 30.

TEA PLANTING IN THE CAUCASUS.

A Reuter's telegram from St. Petersburg says that a tea planter in the Caucasus proposes to gather next month his first crop of tea. Present indications lead him to hope that this undertaking, which was an experimental one, will be crowned with entire success, in which case the area of cultivation will be very largely increased.—*Morning Post*, Aug. 27.

GREAT BRITAIN AND THE NETHERLANDS IN THE EAST.

Particulars of the arrangements made between Great Britain and the Netherlands concerning the boundaries between the possessions of the two countries in New Guinea have just been published. The boundary starts from the southern coast of the island at the middle of the mouth of the Bensbach River, situated at about 141° 1′ 47·9″ of east longitude (meridian of Greenwich), and proceeds to the north, following the meridian which passes through the mouth referred to up to the point where that meridian meets the Fly River. From that point the Fly River forms the boundary up to the 141st. degree of east longitude, which after this continues the boundary up to the point of intersection of the boundaries of the British, Netherlands, and German possessions. Navigation on the Fly River is free for the subjects of both contracting Powers, excepting as regards the carriage of warlike stores.—*European Mail*, Aug. 28.

BRITISH EAST AFRICA.

Mr. Alex. Whyte, in a report on the economic products of British East Africa, makes the following remarks:—

Tobacco has been extensively cultivated by the Messrs. Buchanan for some years, both at Blantyre and Zomba. They have now a large local sale for their cut tobaccos and cigars, which are excellent. They have also obtained remunerative prices for their leaf in the London market, much of which is available for "wrappers." Mr. Robert Buchanan, of this most enterprising firm, which has already done so much to develop the resources of Nyassaland, is now at home, and is busily engaged in the study of tobacco manufacture, and selecting coffee, sugar, and other machinery. There is unlimited score for the cultivation of this promising product. In Ceylon and many other British possessions this industry has made no headway, owing to the expense of labour and the scarcity of suitable land. Here the one is perhaps the cheapest in the world, and the other almost boundless. The natives have grown tobacco for their own use for many years.

Cinchona, of best varieties, had a fair trial in the Shire Highlands, and did well, but, from the extremely low price to which bark has fallen, it has not been found remunerative. But it costs little, need not be harvested until remunerative prices are to be had, and the older the trees become the more enhanced is the value of the property.

Tea of good varieties, Assim and China, has been introduced, but is not as yet cultivated to any extent. It grows luxuriantly, and ought to do well in some districts. Our long dry season would prevent its flushing so freely as it does in Ceylon or Assam, but against this we have to put the abnormally low price of labour at from 9d. to 1s. per lb. I see no reason why it should not become a profitable cultivation. I shall do all I can to introduce seeds and plants of the very best teas procurable.—*L. & C. Express.*

AND GARDENS OF THE CANARY ISLANDS.

A paper read before the Royal Horticultural Society May 14, 1895. By D. Morris, C.M.G., M.A., D.SC., F.L.S. Assistant Director, Royal Gardens, Kew, late Hon. Treasurer, Royal Horticultural Society. We have received from Mr. Morris a copy of this very interesting paper, which will be fully noticed later on in our *Tropical Agriculturist.*

THE METEOROLOGY OF CEYLON FOR 1894: ARE WE IN THE MIDST OF A DRY CYCLE?

This Administration Report for 1894 on the Meteorology of Ceylon is by Mr. D. G. Mantell, Surveyor-General. There is a considerable degree of monotony in reading a report of this nature, especially in the tropics, where the mercury in the barometer appears to the casual observer to be as fixed and immovable as the wall on which the instrument hangs. The thermometer, too, seems to be asleep in these latitudes. The heat at night is nearly the same as at midday in the shade, and the temperature of August differs little from that of December. What is the meaning, when we come to statistics, of the remark we sometimes make after a shower—"How deliciously cool it is now"? Briefly this, that the temperature has dropped perhaps some four or five degrees as shown by the Fahrenheit scale. What, on the other hand, do our friends at home mean when they tell us that the weather has suddenly become colder? Probably a drop of twenty or thirty degrees, or more, in the twenty-four hours. Consequently out here in stewy tropical Colombo when on an early North-East monsoon morning, our temperature sinks to the seventies (say 75 to 77°) old residents facing the keen air are apt to say, "it is bitterly cold." "Bitterly cold" with very much the temperature maintained in the palm-house, Kew Gardens! The tides seem to follow the same rule of doing as little work as as possible. We get our 18 inches here; at home we may have been accustomed to get 18 feet! We note that in the Meteorological system under the Surveyor-General there are 16 principal stations, that is, stations recording daily the readings of the barometer, the "wet bulb" and "dry-bulb" thermometers, the maximum wet and dry, the minimum wet and dry, the solar radiation thermometer, terrestrial radiation thermometer, anemometer, wind vane, and rain-gauge. In addition to these, there are 73 stations reporting only the rainfall.

Some of our readers may not be aware that the heat of the sun's rays in various parts of the island averages generally from 55 to 60 degrees above the mean shade temperature of the locality. At first sight, and in view of the remarks we have made above as to the difference between a cool day and hot day, this seems excessive. But it is not so bad as it looks, as we learn from the Report under review that the solar radiation thermometer is an instrument with its bulb blackened with lampblack to make it absorb all the heat it can get, and enclosed in a glass vacuum-jacket to preserve it from air currents and enable it to retain its heat. Few substances, we suppose, would acquire by exposure to the sun's rays in the open air the temperatures indicated by the solar-radiation thermometer of the meteorologist, a form of instrument which is adopted to facilitate the comparison of readings taken in different places.

The range of variation of shade temperature is very interesting. The greatest range in any one month was at Nuwara Eliya, and amounted to 37°·8 in December. The greatest range in the whole year was also at the Sanatarium and amounted to 46°·7. The highest shade temperature registered at that station during the year being 78°·0 on the 17th May, and the lowest 31°·3 on the 27th December. Next to this comes Puttalam with a range of 38°·1; while Kandy is 35°.6, Colombo 25°·8, and Galle (the lowest) 20°·0

The barometer tables are most uninteresting to the lay reader. The barometers do very little work apparently. The Colony supports sixteen standard instruments, worth, we suppose, several pounds sterling apiece and what do they do for their living? Sometimes they move a thousandth part of an inch, sometimes a hundredth, in a day. Of the whole sixteen, with every variety of climate, and all the care and attention that a poorly-paid staff of observers can afford to bestow, not one could show a variation of half an inch in the whole year! The British householder who taps the "weather glass" in his front hall every day of the year as regularly as clock-work and as regularly infers from his observation that it will be prudent to take his umbrella, would be quite non-plussed in Colombo. If the hand pointed to "Set Fair" today, it would point to "Set Fair" every day "till further notice" or until the nail it hung on had rusted away!

When the atmosphere is hot, it can hold in suspension more moisture than when it is cold. For every degree of temperature, therefore, there is a certain quantity of moisture which can stay in suspension, and no more. If the air gets more moisture than that quantity, or if the temperature of the air falls, the moisture is condensed and falls in the form of rain, snow, or hail according to the climate. The dew on the outside of a tumbler of iced water is produced in this way. When the atmosphere contains all the moisture it can keep, it is said to be "saturated." Meteorologists express the degrees of humidity by calling the saturation-point 100 and absolute dryness, zero. When they state that the humidity is 50, they mean to signify that the atmosphere contains half as much moisture as it would hold at saturation point at the same temperature. The Report under review shows that the humidity was lower in 1894 than in the average year, at nearly every station, by an amount varying from 1 to 5 of the degrees just mentioned. It naturally follows from a low humidity that there must be less rainfall. This we find to have been the case in 1894. Nearly every station was short of rain to an amount varying up to 27 inches. The same experience is likely to be noted for 1895, so that it would really seem as if we were in the midst of one of Tytler's "Dry Cycles.".

Exports of Coffee and Pepper from Southern India.—We call attention to the interesting letter and return sent us by our old friend, Mr. Ralph Tatham, on behalf of Messrs. Arbuthnott & Co. Two new ports having been included, a fair comparison with previous years cannot, perhaps, be offered; but we may mention that while 291,621 cwt. Coffee were sent away in 1894-95; the quantity recorded in the previous three years (for the same periods, but less two ports) were 239 960; 221,553 and 308,283 cwt. respectively. As to Pepper, the figures for four seasons compare thus under the same con-conditions:—

Cwt.	Cwt.
1894-5 = 152,439	1892-3 = 137,355
1893-4 = 172,863	1891-2 = 135,941

LIBERIAN COFFEE.

The Editor, *Madras Mail.*

SIR,—With reference to the correspondence in your paper about Liberian coffee, kindly allow me to state I havo some 85 fine trees of this variety growing on my Clifton Estate here at an elevation of 3,750 feet, and not only growing, but cropping heavily. My recollection is, they took 5 years from seedlings beforo they did crop, but they have gone on cropping ever since without any cultivation specially applied to them, although no doubt, they have likewise benefited from the cultivation the Arabica coffee has had among which they are growing. They resemble young jack trees. The last few years I have kept a careful account of the outturn of parchment, or seed. coffee; and all I can say is, if Liberian is going to produce on the same scale in a large acreage, then there must be a big future before it somewhere in the country. One drawback to its cultivation no doubt is the time it takes to come into bearing. It certainly stands wind and exposure better, and will no doubt flourish, more or less, where Arabica will not. Mr. W. C. Dawson quotes an instance at Manantoddy. This disposes, I think, of Mr. Winterbotham's surmise that Liberian will probably only flourish up to 3,000 feet. But, as that gentleman explains in your issue received today, he only wrote of what he had personally observed. Quite so. "Toda," no doubt, meant to have written 4,000, instead of 5,000 feet, at which his Liberians are cropping. "Nemo' says, *he should say*, the average elevation of cultivation at Nellacotta would be 3,000 to 3,500 feet, but as I agree with him that mere guesswork will not do, I am glad to be able to say that I have the average elevation of cultivation here —that is to say, ⅞ths of the cultivation—recorded at 3,500 to 4,000 feet. "Nilgiri Wynaad" has kindly determined the highest point of Avondale at 3,800 feet, but it happens just to touch 4,000 feet. I have made several tests at various times with more than one aneroid. Then, as to prices. The *Public Ledger*—the official organ of Mincing Lane—I find quotes the sale in July last of "4 bags *brown* Liberian Ceylon at 72s, 3 bags *brown* Liberian Travancore at 72s 6d, and 3 bags Liberian Wynaad at 74s." At the same time, "78 bags Liberian Johore sold, good, bold and medium yellow, at 86s. 6d." "Mr. Winterbotham quotes instances of Wynaad Liberian samples having been valued at 85s to 91s per cwt. It is to be hoped, if there is anything in curing, the bulk will be as carefully prepared as these samples appear to have been, but unless the true Liberian bean is *produced* —that is, I believe, a bold *yellow* bean—I should say, don't expect prices approaching Arabica. I understand Mr. Winterbotham to say there is Liberian *and* Liberian coffee. I agree with him.

H. W. SHELDRICK.

Nellacotta, 9th Sept.

PLANTING AND PRODUCE.

SPICES AND BARK IN STORE.—In an article entitled "How London is Fed" a writer in the *Westminster Gazette* refers to a visit paid to the London and India Docks and the stores of spices and bark there. He says: "'What though the spicy breezes'—but one does not need to go to Ceylon to experience them. As the visitor ascends the stone stair to the cinnamon and spice departments he seems to meet all the perfumes of the Orient. Three great floors are devoted to the 'housing, working, and showing' of, among other like products, cinnamon and cloves, nutmegs, cassia, and Peruvian bark. Here at one corner are a group of men going carefully through great piles of nutmegs, examining each nut, and turning out all of inferior quality. A little further along, the 'weeding of mace, the inner covering of the nutmeg, is going on, and this membrane is actually lying on the floor in cartloads. Cloves are sorted in the same way, and emptied into cases. Cinnamon arrives in tightly packed bales, each one of which is opened out, gone through and classed according to quality. Some of the cinnamon sticks are beautifully fine others are coarse and much broken. Thousands and thousands of bales and cases of these spices lie around, and the wonder is wherever and how the contents are finally used up. This is especially the case as regards the Peruvian bark. The article which bears this name looks very much like the bark of an elm tree. It is peeled from the cinchona tree—a laborious and difficult operation. The name is derived from the fact that the Countess of Cinchon, the wife of the Viceroy of Peru, had been cured of an obstinate intermittent fever by means of it, and thereafter habitually distributed it to those suffering from fever. It goes, of course to the manufacture of quinine, which is carried on by only two or three firms in England. The conclusion one arrives at on glancing round the many thousands of bales at the docks is that it must take a large quantity of bark to produce a little quinine, or else there is a very large demand for the drug. But London is the market for the bark, and all the Continental supplies pass through here. The bark comes largely from Peru still. Formerly the mode of collecting it in the latter country was most wasteful, and it looked as if the tree was likely to become exterminated. The attention of European botanists was called to the matter, and there are plantations in India, British Burmah, Ceylon, and the West Indies, and it is a very important article of export from these countries. The trade in the bark has been active of late years. Has this been due to the influenza?"—*H. and C. Mail.*

INDIAN PATENTS.

Calcutta, the 29th August, 1895.

Applications in respect of the undermentioned inventions have been filed, during the week ending 24th August 1895, under the provisions of Act V of 1888:—

FOR IMPROVEMENTS IN APPARATUS FOR PACKING TEA OR OTHER SUBSTANCES INTO CHESTS.—272 of 1895.—Samuel Cleland Davidson, of Sirocco Engineering Works, Belfast, Ireland, Merchant, for improvements in apparatus for packing tea or other substances into chests, boxes or other receptacles.—*Indian Engineer.*

LABOUR IN NORTH BORNEO.

It is much to be regretted that the efforts of the Government to obtain immigrant labour upon cheaper terms than have hitherto prevailed have not been more cordially backed by the planting community of the Territory. The planters base their lukewarmness chiefly on the allegation that it is impossible to obtain a class of labourer as good as those brought down at existing rates for the reduced figure offered by the Government. No coolies, with one exception, have come forward under the arrangement proposed and this objection strikes us as somewhat "too previous." Meanwhile it may be interesting to state that the agent in Hongkong for some of the estates rejected over a hundred men, brought forward by the Government officer sent there, at $34 per head and a few days afterwards sent the same men down to an estate at a cost of over $60 per head. No complaint was made that these men were of inferior physique or otherwise unsuitable.

Whether the planters have been wise in refusing to support a scheme which if successful would have saved from $20 to 25 per head i.e. $25,000 per 1,000 coolies, is a matter which they will doubtless argue out with their shareholders at home. The great majority are not of British nationality and have large discretionary powers in the matter of the labour supply.—*British North Borneo Herald, August 16th.*

NORTH BORNEO PLANTING NOTES.

Kabeli.—Fair rains, coffee growing nicely, 5,000 holes made in new clearing for Trading and Planting Co. Crop for May 30 catties, June piculs 1.35, July 4.26, plants 30 months old.

Loong Piasow.—Fair rains, everything doing well, coffee blossoming freely, crop for May 4 catties, June 12 catties, July 22 catties. Oldest plants 2 years.

Byte.—Weather dry for last four months to 22nd ult. Coffee banking up, rains last week of month and picking in fair progress. Branches breaking with weight of fruit all over the estate. Crop May, piculs 12·12, June piculs 14·83, July piculs 23·58 parchment. Large increase expected for August.

The May crop was sent to Singapore for realization, and from thence the parchment portion of it was forwarded to Selangore to be husked from whence came the following report upon it: "the parchment was the finest "as regards colour that I have seen in the Straits."

Samples of Byte April crop sent to London were reported upon by Mr. Czarnikow the well-known coffee broker as of fair quality and valued at about 85/ p. cwt. for clean, as against 62/3 the quotation for ordinary Brazil ("fair Channel Rio") on the same date.—*North Borneo Herald.*

CINNAMON: EXTRAORDINARY PRICES FOR CERTAIN MARKS IN THE LONDON QUARTERLY SALES.

THE news to hand by the mail of Aug. 30th, helps to explain so much of Reuter's telegram to his constituents here on the last Cinnamon sales, as was mysterious. The quarterly sale took place in London on the 26th ult., and the great news agency telegraphed an advance of 2d to 3d per lb.—at the previous sale in May there was an advance of 1d to 1½d; but added "reported large advance fictitious." As it was itself reporting an advance in price sufficiently large to delight the heart of growers—the average price for years having ranged in pence, instead of in shillings—one was puzzled to know what was fictitious. It could not be the news which it was then wiring out to its constituents; for then it would be serving up imaginary and misleading news, instead of correct information, for which alone commercial men would care to pay. The "Examiner," in a paragraph which we published in our issue of the 28th ult., surmised that "advance" was a mistake for "shipments"; and that what Reuter telegraphed was that the large shipments reported from this side being believed to be fictitious, buyers operated freely, and hence the advance in price. The explanation was ingenious; but we felt it could scarcely be the correct one, 1st, because Reuter generally telegraphs facts, and not surmises in London regarding crops in the Colonies; and 2nd, because the shipments of cinnamon from here have been large this season—certainly they have not been small as compared with past years, and those here knew better than Reuter that there was nothing fictitious about our table of exports. We preferred to suspend our judgment on Reuter's mystery. The Sale Lists to hand by the mail-steamer which came in on Monday, fully explain the mystery. The news telegraphed by the responsible agency was an advance of 2d, the advance which it warned its constituents against accepting, as being fictitious, was the much larger advance which the Sale Lists or Catalogues exhibit. The fine cinnamon which generally fetches about 33 per cent above the ordinary kinds, was represented, so far as we can see, only by two well-known marks, A. S. G. P. (Golua Poknua) and A. S. W. S. (Wester Seaton). The spice of these two estates sold at rates ranging from 10½ for fourth quality to 1s 6d for firsts—splendid prices having regard to those which have ruled for years past, and showing an advance of 2d to 3d per lb., or thereabouts, on the prices which the same marks or similar fetched at the May Sales. But what do we find, when we turn to ordinary or unknown marks? C. H. De S. Kurnwitte, an estate belonging to the De Soysa family which never set itself to the manufacture of fine spice, or "smarts," sells 23 bales of its first quality at 1s 7d. per lb. or 1d. ahead of Golua Poknua, and 2d. a head of Wester Seaton. Then D. R. in a diamond obtains 1s 7d. for its 2nd quality! V. B. obtains the same price for its firsts, 1s 6d. for its seconds, and 1s. for its thirds; but, greater marvel yet—the 4th quality of A & S. fetches 1s 4d. per lb. whereas its thirds fell to the hammer immediately before at 10d to 10½d. —good price enough! It seems pretty clear that these could not be genuine sales; and any advance based on these figures, wired from London to Ceylon, would be fictitious. If a sudden and heavy demand for cinnamon had sprung up, the best qualities should have shared the advance in prices; but not only do the well-known marks not show a corresponding advance; they are even distanced by medium and inferior sorts!

What is the explanation of this extraordinary feature in the sale? Gambling, we suppose; or worse than that. If it be gambling, the sales would be genuine, and lots probably passed into the hands of a powerful Syndicate which means to control the market. But we fear the bids were fictitious, and represent purchases which will never be completed, or figures at which the spice was bought in with some ulterior object. We shall probably hear more about these sales on the prompt day, when accounts have to be settled.

Meanwhile, as showing that the statistical position of cinnamon cannot explain the reported rise in price, we need only refer to our Export tables. True the stocks in London just now are 2,346 bales, against 3,707 in 1893 and 2,590 in 1892; they were lower, and stood at 2,066 bales and the market was in no way excited. The last compilation by the Chamber of Commerce, making up the exports of Cinnamon up to 16th September for the past four years, gives the following figures:—

	Quills lbs.	Chips lbs.
1895	1,387,382	478,048
1894	1,220,203	379,543
1893	1,168,344	376,878
1892	1,404,767	395,316

It will be seen from the foregoing that this year is ahead of the three preceding years, and we believe of any year, in exports of both quilled Cinnamon and of Chips, and when the auctions were held a month ago, the figures were not against 1895. There can be little doubt that there is a better demand for cinnamon both locally and in London, due, we think, to new uses; but the wild bidding to which we have referred can scarely accurately reflect this demand. We hope it may not prejudice it. Here is what a leading London Firm in the trade, reports:—

CINNAMON.

London, 27th August 1895.

The quarterly sales were held yesterday when 667 bales Ceylon were offered, comprising 267 bales "worked" quill, and 400 bales "unworked" compared with 1063 bales in May last, and 517 bales at this period last year. Most of the Cinnamon offered was sold, the small quantity of *fine* quill meeting good competition and realizing chiefly 2d to 3d per lb. advance on last sales' prices, these sorts being bought for the ordinary sources of consumption. As regards *ordinary* Ekelle descriptions, it is difficult to express an opinion as to the extravagant prices at which, in some instances, the hammer fell. Among others, the mark A.S. No. 3 was knocked down at 10d and 10½d and No. 4 of same mark at 1s 4d per lb. O R diamond No. 2 1s 7d or eleven pence higher than in May, while the *very finest* quill in the sale F. S.

W.S. and A.S. G.P. brought 1s 5d to 1s 6d per lb. These inflated hammer rates, we have reason to believe, do not represent *bona fide* sales, but must be taken as a market operation to influence prices in view of the fact that speculators are reported to have purchased recently "to arrive" about 6,000 bales of these ordinary qualities.

No chips were offered.

Stock 2,346 bales Ceylon against

	1894	1893	1892
Bales	2,066	3,707	2,590

The next sales will be held 25th November.

FORBES, FORBES & CO.

PLANT LORE.

A home correspondent asks if we can say if any attempt has been made to collect the Plant Lore of the native races of this island. He tells us that year by year he finds the interest taken in this subject to be augmenting. He was astonished to learn from a collector of works bearing on Plant Lore that his list of books dealing exclusively with the subject, numbered over 12,000 volumes, many of them, as might be expected, being of very ancient publication. When it is remembered that it has probably been from ancient Plant Lore that a great deal of our present system of medicine has been evolved, the scope of the collection mentioned need scarcely evoke surprise. Upon the traditional medicinal value of plants, all sorts of curious and superstitious beliefs have been built. In one ancient work on the subject we have seen a curious illustration, for instance, of the goose or barnacle tree, the barnacles on the growing plant having developed as they ripened into a lively flock of geese taking naturally to the water beneath the parent tree! But underlying all the quaint traditions attached to particular plants and trees, there have nearly always been valuable treatises, that have largely led to the enrichment of the modern *materia medica*. Among the natives of Ceylon even, there has existed a knowledge of herbal simples, that, if collected might prove of much value. The same may be said of nearly all the people on the face of the earth, and in very many cases their Plant Lore has been carefully collected and published. We are not aware whether this course has been attempted with any system in Ceylon. Incidentally, of course, all botanical works dealing with the vegetation of the island have embraced many references to the subject. But to fulfil all the objects desired, it is necessary that these references should be collected and arranged. It is probable that there may be native writings extant dealing with this topic, but we are unable to say whether at any time these have been so dealt with as to be readily available for modern research. It would undoubtedly form a valuable contribution towards the European literature on the subject if this could be done. What is needed is the publication of facts connected with the Plant Lore of the island quite independently of merely botanical features. The experiences of mediæval "simple" gatherers has largely contributed towards the success of modern medicine. Unsuspected, among the lore of our Sinhalese and Tamils might be found much that would aid usefully in the same direction.

A SMALL LOT OF SIX SEEDS of the Avocado Pear were lately received from Mauritius, through the post, by Mr. Barrant, who handed them for cultivation to Mr. Gueritz. We now learn that four of the seeds germinated and are planted out in four different local gardens. It will be a boon should the cultivation prove a success.—*Borneo Herald.*

BOUND FOR NORTH TRAVANCORE.

Mr. G. D. Gordon who left on the 20th. Sept. for North Travancore, via Tuticorin, will perhaps be remembered in Ceylon as one of the contractors of the Nanuoya Extension of our railway, and also of roads in Ceylon. He was here for 9 years before he went to the Straits 12 years ago, where he has since been employed in railway and road making. In working on the Perak railway, 17 miles in extent, through swamps, he contracted fever, and recently was ordered away to recruit. For the last four months he has been living at Ulapane, and owing, Mr. Gordon says, to our healthy climate, is now quite recovered. The object of his journey to North Travancore is to open out about 50 miles of estate roads through Messrs. Finlay, Muir & Co.'s land. The first road will commence from Munaar and finish at Anaikolum, in extent about 20 miles going towards the west; the other starting from the same place will go 30 miles to the north. The altitude rises from 1,000 to 4,500 ft. Mr. Benzie, of Mahavilla estate, Ulapane, is to follow Mr. Gordon in a few weeks' time for the same work.

A NEW PRIVATE ESTATES COMPANY.

We learn that the proprietors of three estates—Clyde, Kaluganga and Lliskillan—in the Kalutara district are likely to unite in forming an Association or Limited Company for their properties, so saving expenditure on separate Superintendents, Factories, &c. This is a very wise procedure. Clyde has, we believe, a Factory equal to the requirements of all. The total extent is 711 acres of which 508 acres are in tea.

THE "CEYLON FORESTER."

We have, by the courtesy of the Editor, Mr H. C. P. Armitage, Forester at Trincomalee, received the first three parts of this new contemporary, which we cordially welcome, and to which we wish every success. It is a small Magazine of about 16 pages monthly, the subscription is R5 yearly, and the cover shows an old banyan tree with many root props, and a palmyra growing out of its crown.

The first number, that for January, 1895, has an Introduction, and then a short history of the Ceylon Forest Department. There are useful botanical notes on various trees and plants of the Ceylon forests, and the first part of a paper on elephant catching in the Northern Provinces. In the February number is described the saw-mill and Depôt at Batticaloa; the botanical notes are continued, and there is a further instalment of the paper on elephant catching. The March number continues these papers still further, and has an interesting account of the Satinwood tree by Mr. Brown, the Conservator. We commend this new periodical to the attention of Indian forest officers, and especially to those in South India.—*Indian Forester.*

REPORTED SALE OF A NUWARA ELIYA ESTATE.

A Kandy correspondent writes:—"That splendid property Tommagong Estate in Nuwara Eliya, the property of Mr. James McLaren, has just changed hands, the purchaser being Mr. Megginson, who, it will be remembered, lately acquired Charley Valley for the long figure of R700,000. The sum paid for Tommagong has not yet transpired, but is said to be quite a record price even in these flush days."—Tommagong and Park cover 248 acres, of which 180 are in tea, 45 fine coffee, 15 cinchona, 8 timber and grass.

PINE HILL ESTATES COMPANY.

The following is from the Report to be presented on the 28th inst:—

Owing to an abnormally dry season, especially in the Haputale District, the actual crop of tea from the Company's estates fell short of the estimate by 30,000 lb. Coffee was 95 bushels in excess of estimate.

	lb.		₽ lb.	
Pine Hill and Wavahena crop was	119,016	costing cts.	32·21	netting ₽ lb., cts. 49·21
Out-turn from purchased leaf	12,638			
Nahakettia crop was	100,590	,, ,,	32·32	,, 46·23

Average yield from the Company's acreage of Tea in full bearing was 454 lb. per acre.

The profit for the season is equivalent to 11¼ per cent. on the paid-up Capital. Amount available for distribution is R16,793·36, which your Directors would propose to deal with as follows:—

	R. ct.
In writing of balance of preliminary expenses	596·49
Payment of dividend at the rate of 4 per cent.	13,916·00
To Reserve Fund	2,000·00
Leaving a balance to be carried forward of..	280·87
	16,793·36

Estimates for season 1895-96 are:—255,000 lb. Tea and 250 bushels Coffee.

JAVA CINCHONA.

Sept. 5.

The August shipments of cinchona bark from Java according to telegraphic information from that island, amounted to 697,000 half-kilos. The total shipments for the first eight months of the year were 6,013,700 half-kilos. The following are the figures for the last five years from July 1 to June 30:—

Year......	1894-5	1893-4	1892-3	1891-2	1890-1
Half-kilos..	8,705,057	7,428,336	7,955,090	7,786,867	6,876,816

—*Chemist and Druggist.*

PLANTING AND PRODUCE.

The Tea Trade of Persia.—A report on the trade of Bushire makes the following reference to Indian tea: "There has been a strong demand throughout the past year for Indian and Batavian teas, which seem to be steadily supplanting the China teas in favour with the Persian consumer. Heavy consignments, chiefly from India, were received by native merchants, who found no difficulty in disposing of them at a good profit. It was, however, at the port of Bunder Abbas that this trade received its most vigorous impulse, the import being more than double that of the previous year. This largely increased import was probably to a great extent due to an effort to take advantage of a favourable opportunity for suppling the demands of regions beyond the north-eastern frontier of Persia."

Tea Direct to Manchester.—As announced at the last half-yearly meeting of the Ship Canal Company, Messrs. Cayzer, Irvine, and Co. have made arrangements to establish a service of steamers from Calcutta, Madras and Colombo to Manchester, the sailings to be about once in every six weeks. The first steamer, the "Clan Mackay," 2,602 tons gross register, left Calcutta for Manchester on August 6th, and is now *en route*, having left the Suez Canal on August 28th. She will call at London, and, after discharging what cargo she has for that port, will come round to Manchester with a large consignment of tea, being expected in about a fortnight. From Manchester she will proceed light to Glasgow and Birkenhead, to load outwards, "and will thereby afford,' says the *Manchester Guardian*, "local shippers a striking object-lesson in the influence of steamship conferences. Although hundreds of tons of merchandise are sent away daily from Manchester to Calcutta, and although steamers from, and bound for, Calcutta will be actually discharging in the Manchester Docks, owing to 'Conference arrangements,' those vessels must steam away to Glasgow empty, and then come back to Berkenhead for the goods, which have in the meantime been sent thither by rail or barge. It is to be hoped that the Calcutta shippers will not be content with such an anomalous state of things when it lies in their power, by combining to induce the ring to recognise Manchester as a loading port, as is now done by the Bombay and China Conferences." The next of the Clan boats to load at Calcutta for Manchester will be the "Clen Mackinnon," 2,268 tons gross register, which will leave about the end of the present month, calling at Madras and Colombo.

Fruit Growing in the Southern States.—The particulars given of the peach harvest in Georgia are interesting. On one farm alone 520 hands were daily engaged during the season. They gathered and packed 25,000 baskets of peaches a day. Eighty per cent. of them camped out while so engaged, and they included all kinds of people, from college boys to coloured men and women. They began their work at four o'clock in the morning, and continued it as long as they could see. Not much trouble about "hours," it will be observed here, and no strikes in the labour market. The fruit was plentiful, and two-thirds of it paid a profit of from 25 to 75 cents per crate. The industry is in its infancy, however. The negroes wanted their pay in silver dollars. They were cumbersome to everybody else, but the darkeys enjoy the weight of the silver.—*H. & C. Mail.*

COFFEE PRODUCTION IN THE MONTANA OF PERU.

The acting British Consul at Callao says that the region which Peru offers to the coffee planter, unsurpassed in fertility, and almost unlimited in extent, is situated on the eastern slope of the Andes, at a height of from 6,000 to 12,000 feet above sea level, among the network of streams and rivulets that find their way into the great affluents of the Amazon. It is the Chanchamayo district—for most of the coffee that passes under the name of Vitoc or Huanuco comes from Chanchamayo—which is the real coffee-planting district of Peru, and it is the production of this region that has elevated Peru to the rank of a coffee exporting country. This is due to the completion of the Central or Oroya Railway, by the Peruvian Corporation, to its present terminus at Oroya, giving railway carriage over the crest of the Cordillera, and also to the opening up of the Perené and adjacent valleys which form its prolongation. Oroya is about 60 miles from Chauchamayo valley, and there is a fair road all the way, passing through the town of Tarma, the capital of a department with about 7,000 inhabitants. The Chaucamayo Valley, itself about 10 miles long, is now in the hands of private owners, but the rich and far more extensive valleys beyond it of the Perené, Paucartambo, and Rio Colorado, have now been linked on to La Merced, the last town in Chauchamayo by the extension of the Tarma-Chanchamayo road through a short but difficult defile. The output of coffee for the whole region was about 1,500 tons in 1893, but extensive planting has lately taken place and production will shortly, it is said, be trebled.—*The Cosmopolitan.*

[On which "Old Colonist" who has been to Peru, writes:—"This British Consul, writes from hearsay and hearsay in Peru is valueless. Only an ignorant idiot would talk of coffee up to 12,000 feet in any part of this earth. There is no coffee at Pacasmayo nor within 100 miles of it. One dealer I met there, however, boasted of having *6,000* trees in the interior. Not 100 acres at the famous Huanuco, nor a forest tree within 50 miles of it. *Perené* yes, but first get a settled Government and then talk about coffee in Peru. —Ed. *T.A.*]

THE NORTH TRAVANCORE COMPANY'S CONCESSION IN THE KANAN DEVAN HILL.

We have been favoured with an inspection of a map of the Kanan Devan Hills, showing the territory of which a concession was made by the Madras Government to the North Travancore Land Planting and Agricultural Society. The concession which is entirely in the State of Travancore is separated from Madras by the Cardamom Hills. It extends to about 120,000, acres between 40,000 and 50,000 acres (approximately) being suitable for cultivation. Within the area defined by the map are 27 estates. These estates were purchased from the North Travancore Society, each year a small rent being still exacted from the holders. The property of the North Travancore Society has since passed into the hands of the North and South Sylhet Tea Companies as represented by Messrs. Finlay, Muir & Co. In the last issue of our Directory was published a list of estates in the district. Since then the estates in the appended list have been opened up. From the table it will be seen that by far the largest portion of cultivable land is in the hands of the North Travancore Society or rather in those of Messrs. Finlay, Muir & Co. As shown in the Map, the Kanan Devan Hills consist for the most part of extensive tracks of grass plateaux, in the higher altitudes, and of forest land at a lower level. The land as yet is practically unopened, only 3883 acres being in cultivation.

The altitude of the Devan Hills ranges from 686 feet above sea level, on the west, to 8,840 feet—the highest point at Anemudi. Generally speaking forest land gives way to grass plateau at 5,000 feet, though at Cholemalai (6,200 feet) and in the surrounding district forest is met with at a greater altitude. In the matter of roads, as indicated, much work requires to be done. On paper the existing means of communication look somewhat imposing, but as a matter of fact the best of them is little better than a mere bridle-path. Joining a road to Neremangalain and Cochin a cut-road leads part of the way to Munar Camp from which combinations of footpaths and cart roads lead to the boundary of the territory, and descending to the valleys, communicate with roads leading to Anikolam and Coimbatore, to Wattawadde and Kodikanal and to Kotagudi and Bodinakanur. From Devakulum a cut road affords a means of transit to Munar Camp and taps the other roads to the north and east. It is also in contemplation to construct a road from the Munar Valley so as to secure direct communication with Cochin. The road will be about 20 miles long, its whole length in the Company's territory lying through forest land. A second road to the north, 30 miles in length, will be constructed to tap a road leading to Coimbatore. The country is well watered. Five streams of no inconsiderable magnitude with their tributaries flow to the west, an equal number drain the country on its southern face while another river runs parallel to the course of the projected road to Coimbatore. The district is healthy and, as will be seen from the table, the rainfall is heavy. Under existing conditions, transport is a matter attended with some difficulty. Communication is had from Tuticorin by train to Ammanaikanur, thence by bullock cart to Bodinaikanur, afterwards by foot road to Devakulam

The forest land standing in name of the North Travancore Company is stated at 30,000 acres; but this we are informed is only an approximation. At present steps are being taken to have it cleared and planted. Mr. W. Milne of Warwick Ambewella has just returned from a visit to the Kanan-Devan Hills and the work of road-making to which we have referred, will be carried out by Mr. G. D. Gordon, who, as stated in a previous issue was a Sub-contractor for the Nannoya Railway Extension, and who has acquired great experience of such work in the Straits and India. The recent visit of Mr. Milne, we are informed, has shown that large tracts in the Munar Valley district are suitable, on the west, for tea, and on the north, for coffee. The work of clearing this locality will be pushed on with as little delay as possible.

Names of Estates.	Elevation	Average Rainfall.	Tea under 2 years.	Coffee under 3 years.	Cinchona under 4 years.	Total Cultivated Area.	Waste Forest	Waste Grass	Total Area of Estate.	Proprietors.	Managers.
Kanniamallai	5200	...	90	...	...	90	512	87	689	H. E. Tollemache	H. E. Tollemache
Cuddalaralle	4500	...	...	...	...	...	500	...	500	Messrs. Milligan & Fleming	...
Munaar	4750	135"	25	...	...	25	375	60	460	North and South Sylhet Tea Co., Ltd.	H. M. Knight, Asst. Conductor.
Periyavarrai	5800	120"	126	...	...	126	174	10	310	North and South Sylhet Tea Co., Ltd.	H. M. Knight
Craig Lamont	5250	90"	...	60	...	60	10	...	70	...	J. Payne
Chinnakanal	6500	...	...	...	17	17	8	...	25	H. G. Turner	James Turner
Total	...	...	241	60	17	318	1579	157	2054		

The total extent of cultivatable land in the Northern Kanan Devan District of Travancore is now 40,000 acres (approximately) of which 4,000 acres are in cultivation —900 acres with tea, 1,300 acres with coffee, and 1,800 acres with cinchona. Of the balance 35,000 acres are forest (30,000 acres of which are alone owned by North Travancore Society) and 1,300 acres grass. Compared with the last returns, the above show an increase of 500 acres of tea and 200 acres of coffee, while the cinchona acreage has been reduced by 40 acres. The addition to the total area of estates has been 3,000 acres.

DEAFNESS. An essay describing a really genuine Cure for Deafness, Ringing in Ears, &c., no matter how severe or long-standing, will be sent post free.—Artificial Ear-drums and similar appliances entirely superseded. Address THOMAS KEMPE, VICTORIA CHAMBERS, 19, SOUTHAMPTON BUILDINGS, HOLBORN, LONDON.

INDIAN TEA SALES.

(*From Watson, Sibthorp & Co.'s Report*).

Calcutta, Sept. 18th, 1895.

24,123 packages changed hands in the sales held on the 12th instant. The market was active, common sorts, especially Pekoes, being in very strong demand at a further slight advance, while the better grades sold irregularly with here and there a tendency in buyers' favor.

Buyers for the Colonies and Bombay were very keen, and suitable teas, particularly for the latter market, realised very full prices.

The average price of the 24,123 packages sold is As. 8-4 or about 8¾d per lb. as compared with 18,967 packages sold on the 13th September 1894 at As. 8-9 or about 9¼d per lb. and 15,381 packages sold on the 14th September 1893 at As. 6-7 or nearly 8½d per lb.

The exports from 1st May to 16th September from here to Great Britain are 55,798,142 lb. as compared with 55,169,921 lb. at the corresponding period last season and 47,776,962 lb. in 1893.

Note.—Last sale's average was As. 8-2 or about 8¼d per lb.

Exchange.—Document bills, 6 months' sight, 1s 1-11-16d.

Freight.—Steamer £1-12-6 per ton of 50 c.ft.

THE SEASON IN MADRAS.

Yesterday the Board of Revenue telegraphed to the Government of India for the week ending the 21st instant as follows:—"Rainfall is good in Ganjam and Cuddapah; fair elsewhere, except in Coimbatore, Madura and Tinnevelly. Agricultural operations are proceeding. Standing crops are generally fair and improving after the recent rains, but withered or withering in parts of Madura and Tinnevelly. Want of rain is felt also in parts of Nellore, Cuddapah and North Arcot. Some harvest is going on with generally moderate yield. Pasture and fodder are generally sufficient. Cattle is in generally good condition. Prices are falling in parts of the Deccan; elsewhere generally stationary, but dry grains are slightly dearer in Godavari and Coimbatore."—*M. Mail*, Sept. 25.

DRUG REPORT.

(From *Chemist and Druggist.*)

London, Sept. 14th.

Caffeine. The manufactures are very busy executing orders, and for September delivery 22s per lb. is the quotation, although it might perhaps be possible to buy a fraction below that price. For October-November delivery the makers would accept 20s and the price for December delivery has recently been reduced to 18s per lb. Most people interested in the article seem inclined to think that it will not fall below that figure.

Cinchona.—The following figures are given concerning the movement of cinchona-bark on the Amsterdam market. The Amsterdam stock on August 31 consisted of 16,050 bales of which 1,902 were produced on the Government plantations, the remainder on private plantations. The imports in the course of the month of August amounted to 4,640 bales, and the sales to 6,076 bales.

Quinine has been very neglected through the week, and no business of any importance can be reported. The nominal quotation for second-hand German, in bulk, remains 13½d per oz. at which there are sellers, but there are no buyers over 1s 1½d per oz.

Vanilla in small supply; good qualities, however, are firmly held, and sold at an advance of about 1s last week.

CHAFED SKIN, PILES, SCALDS, BRUISES, CUTS, STINGS, NEURALGIC and RHEUMATIC PAINS, SORE EYES, EAR-ACHE, THROAT COLDS, and SKIN AILMENTS quickly relieved by use of CALVERT'S CARBOLIC OINTMENT.
Large Pots 13½d. each (English rate.) Sold at Chemists, Stores, &c.
F. C. CALVERT & CO., Manchester.

CEYLON TEA IN AUSTRALIA.

(*Alfred Harvey & Co.'s Monthly Tea Report.*)

Melbourne-Sydney, Sept. 17.

General.—The third series of sales of Foochow Teas, ex "Taiyuan," was held on the 5th, the features of which were the reluctance of the trade to bid the higher price that increased cost demanded, firmness upon that part of holders resulting in the greater bulk of the offerings being withdrawn, and the larger quantity of good Panyong kinds, sold from 5½d, to 6½d, being taken by a speculator. The position of both the markets of supply and consumption, as regards the stocks available seems to warrant the safety of the spec., irrespective of the strong advance in value of leaf since the Foochow market opened.

Much larger supplies of Indians have been available during the month, and these, owing to the heavy falling-off in supplies from Ceylon, found ready buyers at last month's rates, with an improvement in one or two choice breaks shown. Calcutta, in sympathy with its rival markets of production, has shown an advancing market during the month marked with a decided firmness at close, both in value of leaf and exchange.

The continued advance of the Colombo market has materially reduced shipments to Australian ports, and has resulted in very high prices being paid for the few small lots of true Ceylon-flavoured Teas offered. The lower qualities show no change, the falling-off in supply being no greater than that of demand

Stock in bond on the 7th were 3,485,979 lb. as against 3,884,755 lb. at some time last year.

Ceylon.—The very high prices ruling in Colombo have checked shipments to all Australian ports; consequently for the few true-flavoured lots offered upon this market further strong advances have been paid. "Bombays," owing to the better supply of low-grade, clean liquoring Indians, have been not only without change, but the demand has fallen away as rapidly as the shipments have diminished. As usual, the bulk of the sales have been effected privately, only about 700 chests being printed, and these sold at fancy prices whenever the lot offered showed good Ceylon flavour, whether it was a Pekoe Souchong or Orange Pekoe. Prices paid were:—For Dust, 5¼d to 5¾d; rough Leaf, 5¼d to 5½d; "Bombays," 5¾d to 6¼d; clean Pekoe Souchongs, 7d to 7½d; good flavour, up to 8½d; Pekoes, 7½d for clean, up to 10d for good flavour; Orange Pekoes, 8½d for tippy, up to 1s 1½d for fine hill-grown. Nothing choice shown publicly, but small lots sold privately at 1s 4d to 1s 6d. Stocks in bond on the 7th were 342,384 lb.

LONDON REPORTS ON CEYLON PRODUCE.

COFFEE.

August Brazil receipts totalled 810,000 bags against 844,000 bags last year, and to date since 1st July 1,325,000 against 1,466,000 in 1894. The fact of such heavy receipts has led to the belief in some quarters that the estimates of the present crop will be exceeded. Messrs. Faria Cunha & Co., Rio, Messrs. Goetz Hayn & Co., and Messrs. James Mathew & Co., Santos, have cabled to this effect. Simultaneously favorable reports as to the 1896-97 crops have come to hand, advices stating that the weather is fine, and prospects under present conditions point to a large yield. It is certainly early to talk at all definitely as to 1896-97 crops, all we can gather is that the present conditions are favorable. These telegrams, combined with liberal receipts, have adversely affected terminal markets. In Havre prices have eased 1¼ to 2 frs., in London 1s 9d to 2s. The undertone is easy, but speculation continues cautious, operators do not seem inclined to take strong views at least for the present, and a waiting market is the result. Cost and freight prices in Brazil keep remarkably steady. Buyers are reluctant, having the opinion that with heavy receipts Brazil must come to them. On the spot the public sales have been small, prices are steady, commoner kinds of Columbian only being more difficult of sale. Messrs. Duuring and Zoon's monthly figures just to hand by wire show a decrease in the European stocks of 2,850 tons, and an increase in the World's Visible Supply of 13,860 tons.—*I. A. Rucker & Bencraft's Report*, Sept. 5th.

COLOMBO PRICE CURRENT.

(*Furnished by the Chamber of Commerce*).

Colombo, Sept. 30, 1895.

Exchange of London, Closing Rates, *Bank Selling Rates*:—On demand 1/1½, 4 months' sight 1/1 17-32; 6 months' sight 1/1 9-16. *Bank Buying Rates*:—Credits 3 months' sight 1/1 21-32; 6 months' sight 1/1 11-16. Docts. 3 months' sight 1/1 11-16; 6 months' sight 1/1 23-32.

Coffee.—Plantation Estate Parchment on the spot per bushel, R17·00 to 17·50.—coffee quotations are quite nominal. Estate Crops in Parchment, delivery per bushel, R18·50. Plantation Estate Coffee, f.o.b. on the spot per cwt, R83 to 85. Plantation Estate Coffee f.o.b. Special Assortment per cwt.—no quot., Liberian parchment on the spot per bushel, R12·50. Garden and Chetty Pachment on tho spot per bushel. —no quot., Garden and Chetty Coffee f.o.b. per cwt, R73. Native Coffee f.o.b. per cwt.—no quotations.

Tea.—Average Prices ruling during the week: Broken Pekoe, per lb 69c. Pekoe per lb 50c. Pekoe Souchong, per lb 41c. Broken mixed and Dust, per lb 37c.—Averages of Wednesday's sale.

Cinchona Bark.—Per unit of Sulphate of Quinine per lb 1½c. to 3c.—1 to 3 %. Twigs and Branch. —No quotations.

Cardamoms.—per lb 80c. to R1·50.

Coconut Oil.—Mill oil per cwt, R15·25. Dealer's oil per cwt, R15·12. Coconut oil in ordinary packages f.o.b. per ton, R337·50.

Copra.—Per candy of 560 lb R41·00 to R48·00.

Coconut Cake: (Poonac) f.o.b. per ton, R37·50 to 47·50.

Cocoa.—(Unpicked & undricd) per cwt, R35 to R48.

Coir Yarn.—Nos. 1 to 8 per cwt, R6 to 15.

Cinnamon.—Nos. 1 & 2 only per lb 65c. Ordinary Assortment, per lb 61½c.

Plumbago: Weaker.—Large Lumps per ton, R150 to 330. Ordinary Lumps per ton, R130 to 290. Chips per ton, R80 to 150. Dust per ton, R30 to 100.

Ebony.—Per ton,—Govt. sale 7th October.

Rice.—Soolye per bag, R7·25 to R8·00.
Pegu and Calcutta Calunda per bag R7·70 to R8·00.
Coast Calunda per bushel, R3·12 to R3·32.
Muttusamba per bushel, R3·25 to R3·75.
Kadappa and Kuruwe per bushel,—No quotations·
Rangoon Raw 3 bushel, bag, R10·50.

Freights.

Cargo.	Per ton London per str.	N. York per str.	Trieste per str.	Mar'lles per str.	Hamb', Bremen &c.
	s. d.	s. d.	s. d.	R. c.	s. d.
Tea	20/	..	25/	25	20/
Coconut Oil	20/	..	25/	..	2C/
Plumbago	17/6	..	25/	..	20/
Cocónuts in bags	..	..	25/	..	20/
Other Cargo	..	..	25/	..	20/
Broken Stowage	10/	..	25/	..	20/
SAILERS.					
Coconut Oil	..	35/	..	..	..
Plumbago	..	35/	..	..	..

New York rates per steamer with transhipment 12/6 @ 15/ above London rates.

LOCAL MARKET.

By Mr. A. M. Chittambalam, 7, Baillie St., Fort.

Colombo, Oct. 5th, 1895.

Garden Parchment :—	R15·00 to 15·25	per bushel
Chetty do :—	15·50 to 16·00	do
Native Coffee :—	65·00 to 66·00	per cwt
do f.o.b. :—	72·00 to 73 00	do
Liberian Parchment,	13·00	per bushel (nominal)
do Coffee,	67·00	per cwt
Cardamoms.—	0·70 to 2·00	per lb (nominal)
Cocoa.—(nominal)	35·00 to 45·00	per cwt do
Rice.—Market is steady :—		
Kazla	R6·75 to 7·00	per bag
Soolye	7·25 to 7·75	do
Callunda	7·50 to 8·00	
Coast Callunda	3·00 to 3·06	per bushel
Kuruve (Scarce)		
Muttusamba	3·25 to 3·50	do

Cinnamon.—Quoted Nos. 1 to 4, at 61c and Nos. 1 and 2 at 65 cents per lb (nominal)

Chips.—R80·00 per candy (nominal)

Coconuts.—Ordinary	R35·00 to 38·00	per 1,000 (nominal)
do Selected	40·00 to 43·00	do do
Coconut Oil.—	14·75 to 15·00	per cwt do
Copra.—Market quiet :—		
Kalpitiya	R46·00 to 46·50	per candy
Marawila	44·00 to 45·00	do
Cart Copra	38·00 to 42·00	do
Poonac.—Gingelly	77·50 to 85·00	per ton
Chekku	75·00 to 80·00	do
Mill (retail)	50·00 to 55·00	do
Ebony.—quotations at	R100 to R185	(nominal)
Satinwood.—cubic feet	1·50 to 2·12	do
Halmilla.— do	1·75 to 2·00	do
Kitul Fibre.—Quoted at	R30·00	per cwt (nominal)
Palmyra Fibre.—Quoted nominally :—		
Jaffna Black.—Cleaned	R15·00 to 17·00	per cwt
do Mixed	10·00 to 13·00	do
Indian do	7·00 to 9·00	do
Do Cleaned	10·00 to 14·00	
Sapan Wood.—Quoted	65·00 to 70·00	per ton
Kerosine Oil.—American	6·70 to 6·75	Per case
do Russian	3·12	Per tin
Kapok.—Cleaned f. o.b :—	27·00 to 27·50	(nominal)
do Uncleaned	6·00 to 6·50	do
Croton Seed	13·00 to 17·00	do
Nux. Vnomica	2·50 to 3·00	per cwt

CEYLON EXPORTS AND DISTRIBUTION 1895.

COUNTRIES.	Coffee cwt. Plan-tation	Coffee cwt. N'tive	Coffee cwt. Total.	Cinchona. 1895 B'nch &Trunk lb	Tea 1895 lb.	Cocoa cwt.	C'moms lb.	Cinnamon. Bales lb.	Cinnamon. Chips lb.	Coconut Oil. 1895 cwt.	Coconut Oil. 1894 cwt.	P'bgo. 1895 cwt.
To United Kingdom ..	41213	36	41249	525688	65857110	19695	158619	987547	234666	97506	167021	79791
,, Austria	3156	100	3256	..	2573	161	..	6000	5600	15707	19381	..
,, Belgium	25	..	25	90728	8113	917	..	27000	22100	3204	9810	9229
,, France	913	1056	1969	7900	31697	473	..	11500	8400	404	483	433
,, Germany	649	..	649	..	176738	637	37642	198215	143640	10741	23651	27977
,, Holland	..	..	..	20474	10781	..	..	..	..	..	...	4069
,, Italy	1	..	1	21647	5473	50	..	99500	40880	401	6234	..
,, Russia	152	..	152	..	206895	..	..	..	..	..	1902	..
,, Spain	..	..	..	..	42275	45	..	121000	1120	101	99	..
,, Sweden	..	..	..	..	750	..	..	..	..	..	..	..
,, Turkey	..	..	..	..	7367	..	..	..	..	..	..	..
,, India	468	1072	1540	..	636869	9	57061	1100	50	4644	21010	313
,, Australia	6582	641	7223	..	6867390	52	112	4700	12192	1983	2595	665
,, America	686	..	686	136501	297343	941	5772	50000	22400	97949	91149	82735
,, Africa	..	..	..	..	90726	..	..	..	..	129	..	..
,, China	80	..	80	..	235601	33	1049	45000	..	474	1705	..
,, Singapore	1	..	1	..	23752	..	..	..	..	9410	3709	..
,, Mauritius	367	802	1169	896	109703	..	..	..	..	..	..	..
,, Malta	..	..	..	..	59595	..	..	..	..	..	..	..
Total exports from 1st Jan. to 30th September 1895	54293	3707	58000	803834	74670751	23006	260255	1550562	491048	242653		205211
do 1894	22892	588	23480	2219688	64940455	16111	212462	1372163	389632	348749		244827
do 1893	44723	1891	46614	3070722	61827462	25005	253752	1257296	393081	253209		280442
do 1892	35353	2110	37463	5018373	56098922	15043	274433	1536773	405166	388031		334928

MARKET RATES FOR OLD AND NEW PRODUCTS.

(From S. Figgis & Co.'s Fortnightly Price Current, London, 12th September, 1895.)

EAST INDIA. Bombay, Ceylon, Madras Coast and Zanzibar.	QUALITY.	QUOTATIONS
ALOES, Socotrine	Good and fine dry liver...	£3 10s a £5
Zanzibar & Hepatic	Common and good ...	30s a 80s
BARK, CINCHONA Crown	Ledgeriana chips	2d a 3½d
	Original stem	1½d a 3d
...	Renewed	2d a 4½d
	Chips	1½d a 2d
BEES' WAX, White	Sli. sof. to gd. hard brig.	£7 10s a £8
Yellow ...	Dark to fair	£6 a £7
Mauritius & Madagascar..	Fair to fine	£6 7s 6d a £6 17/6
CAMPHOR, China .. / Japan ..	Fair average quality..	200s a 205s
CARDAMOMS—		
Allepee	Fair to fine clipped	1s a 2s 6d
Mangalore ...	Bold, bright, fair to fine	1s 10d a 2s 8d
Malabar ...	Clipped bold bright fine	1s 8d a 2s 3d
Ceylon	Middling stalky & lean	1s 3d a 1s 6d
Tellicherry	Good to fine	1s 6d a 1s 8d
	Brown split	9d a 1s 4d
Mysore	Fair to fine plump clipd.	1s 9d a 3s 6d
	.. " small	1s 2d a 1s 5d
Long Ceylon ...	Shelly to good ..	1s 1d a 2s 11d
	Seeds	1s 6d a 1s 8d
CASTOR OIL, 1st	White	2½d a 3d
2nd	Fair and good pale	2¼d a 2½d
CHILLIES, Zanzibar ...	Fair to fine bright	28s a 33s
	Ord'y. and middling	24s a 27s
CINNAMON, 1sts	Ord'y. to fine quill	1s 4d a 1s 8d
2nds	" " " "	1s 2d a 1s 3d
3rds	" " " "	1s a 1s 1d
4ths & 5ths	Woody and hard	10d a 1s 1d
Chips	Good ordinary	2½d
CLOVES, Zanzibar and Pemba.	Fair to fine bright	2¼d a 2⅜d
	Common dull and mixed	2d a 2 3-16d
" STEMS	Common to good	1d
COCULUS INDICUS ...	Fair sifted	8s a 12s
COFFEE	Bold to fine bold colory	105s a 112s
	Midding to fine mid	97s 6d a 104s
	Low mid and low grown	95s a 99s
COLOMBO ROOT...	Good to fine bright sound	10s a 20s
	Ordinary & middling	7s a 8s
CROTON SEEDS, sifted...	Ordinary to fine fresh ...	30s a 37s
CUTCH	Fair to fine dry	20s a 32s
DRAGONS BLOOD, Zan.	Ordinary to good drop	20s a 50s
GALLS, Bussorah & Turkey	Fair to fine dark blue	47s a 50s
	Good white and green ..	35s a 40s
GINGER, Calicut Cut A.	Good to fine bold	68s a 77s 6d
B & C	Small and medium	50s a 60s
Cochin Rough...	Common to fine bold	32s a 35s
" ...	Small and D's	29s a 30s
Bengal Rough,	Fair to good	22s 6d a 23s 6d
GUM AMMONIACUM ...	Blocky to fine clean	20s a 50s
ANIMI, washed ...	Picked fine pale in sorts,	£9 a £11 10s
	Part yellow & mixed do.	£8 10s a £8 15s
	Bean & Pea size ditto	£1 a £7 10s
	Amber and red bold	£5 a £7
scraped...	Medium & bold sorts	£4 a £7
ARABIC E.I. & Aden...	Good to fine pale frosted sifted	40s a 45s
	Sorts, dull red to fair ...	30s a 37s 6d
Ghatti ...	Good to fine pale selected	35s a 45s
	Sorts middling to good	25s a 32s 6d
Amrad cha.	Good and fine pale	35s a 45s
	Reddish to pale brown ...	25s a 32s
Madras ...	Dark to fine pale	20s a 33s 6d
ASSAFŒTIDA	Fair to fine pinky block and drop	50s a 100s
	Ordinary stony to midling	20s a 45s
KINO	Fair to fine bright ..	£25 a £30
MYRRH, picked	Fair to fine pale	£5 a £7
Aden sorts	Middling to good	65s a 75s
OLIBANUM, drop...	Fair to fine white	30s a 55s
"	Reddish to middling	17s a 25s
pickings...	Middling to good pale	8s a 14s
siftings	Slightly foul to fine	9s a 13s
INDIARUBBER	Red hard clean ball	2s 1d a 2s 5d
East African Ports, Zanzibar and Mozambique Coast	White softish ditto	1s 8d a 2s 2d
	Unripe root	1s 1d a 1s 4d
	Liver and Lamu all	1s 8d a 2s 1d
	Sausage, or fair to fine	1s 3d a 2s
	" without sticks	2s 1d a 2s 4d
Assam	Good to fine	1s 7d a 2s 2d
	Common foul & midlling	9d a 1s 5d
Rangoon	Fair to good clean	1s 6d a 2s 2d
Madagascar, Tamatave, Majunga and Nossibe	Good to fine pinky & white	2s 1d a 2s 5d
	Fair to good black	1s 6d a 1s 9d
ISINGLASS or FISH MAWS Tongue.	good to fine pale	1s 10d a 2s 9d
	dark to fair	9d a 1s 6d
Bladder Pipe	Clean thin to fine bold...	1s 6d a 2s 6d
Purse...	Dark mixed to fine pale...	5d a 1s 2d

EAST INDIA. Bombay, Ceylon, Madras Coast and Zanzibar.	QUALITY.	QUOTATIONS.
Kurrachee Leaf ...	Good and fine pale	2s 3d a 3s
	Red part thin ..	1s 6d a 1s 11d
INDIGO Bengal	Middling to fine violet...	4s 8d a 5s 6d
	Ordinary to middling ...	3s 3d a 4s 6d
Kurpah	Fair to good reddish violet	2s 10d a 3s 6d
	Ordinary and middling	1s 10d a 2s 8d
Madras (Dry Leaf)	Middling to good ...	1s 8d a 3s
	Low to ordinary ...	7d a 1s 5d
IVORY—Elephants' Teeth		
60 lb & upwards ...	Soft sound	£57 a £68
over 30 & under 60 lb	" "	£50 a £60
60 a 100 lb. ...	Hard " "	£38 a £43
Scrivelloes	Soft " close & wide	£22 a £35 10s
Billiard Ball Pieces 2½ a 3½ in	Sound soft	£90 a 105 a £105
Bagatelle Points ...	Sli. def. to fine sound soft	£57 10s a £83
Cut Points for Balls ...	Shaky to fine solid sl. sft	£70 10s a £76
Mixed Points & Tips...	Defective, part hard ..	£13 a £44
Cut Hollows	Thin to thick to sd. sft	£22 10s a £39 10s
Sea Horse Teeth — ... ¾ a 1¼ lb.	Straight erked part close	9d a 3s
MYRABOLANES, Bombay	Bhimlies I, good & fine pale	7s 9d
	" II, fair pickings	3s 6d a 4s 3d
	Jubblepore I, good & fine pale	6s 3d a 7s
	" II, fair rejections	3s 6d a 4s 6d
	Vingorlas, good and fine	4s a 5s 6d
Madras, Upper Godavery	Good to fine picked ...	5s 6d a 6s 6d
" " ..	Common to middling ...	3s 3d a 4s 6d
Coast	Fair	3s 4d a 4s 9d
Pickings ...	Burnt and defective ...	3s 3d a 4s
MACE, Bombay ...	Dark to good bold pale ..	1s 6d a 2s
	W'd com. dark to fine bold	4d a 6d
NUTMEGS, " ...	65's a 81's	2s 3d a 3s 2d
	90's a 125's	1s 5d a 2s 1d
NUX VOMICA	Fair to good bold fresh	6s a 9s
OIL, CINNAMON ..	Good heavy .. .	3d a 1s 6d
CITRONELLE	Bright & good flavour...	1¼d
LEMONGRASS	" " " ..	1⅝d
ORCHELLA WEED Ceylon ...	Mid. to fine, not wooly	11s a 15s
Zanzibar	Picked clean flat leaf ...	12s a 18s
Mozambique	" wiry	22s a 32s
PEPPER—		
Malabar, Black sifted ...	Fair to bold heavy .	2⅝d a 2½d
Alleppee & Cochin ..	" good " ...	
Tellicherry, Black	" "	3½d
PLUMBAGO, Lump ...	Fair to fine bright bold	15s a 16s
	Middling to good small	3s 6d a 13s
Chips ...	Dull to fine bright	1s 6d a 8s 6d
Dust ...	Ordinary to fine bright...	2s a 6s
RED WOOD	Fair and fine bold	£3 10s a £4
SAFFLOWER, Bengal	Good to fine pinky nominal	95s a 105s
	Ordinary to fair ...	70s a 80s
	Inferior and pickings ...	30s a 50s
SANDAL WOOD, Logs	Fair to good flavour ...	£30 a £50
" " Chips..	Inferior to fine	£4 a £8
SEEDLAC	Ordinary to fine bright	5s a 100s
SENNA, Tinnevelly ...	Good to fine bold green	6d a 8d
	Fair middling medium	3d a 5½d
	Common dark and small	½d a 2½d
Bombay ..	Ordinar to good ...	1d a 2d
SHELLS, M.-o'-P. ..	EGYPTIAN—bold clean ..	55s a 69s
	medium thin and stout	65s a 82s 6d
	chicken, part oysters	6s 6d a 77s 6d
large	BOMBAY—poor to finest no	67s 6d a 75s
medium part stout	clean part good color	75s a 82s 6d
chicken part stout	" " "	72s 6d a 87s 6d
oyster & broken pcs	" " "	75s a 82s 6d
Mussel	medium and bold sorts	37s a 45s
	small and medium sorts	15s a 30s
Lingah Ceylon	Thin and good stout sorts	9s a 20s
TAMARINDS ...	Mid. to fine black not stony	9s a 11s
	Stony and inferior ..	4s a 6s
TORTOISE-SHELL	Sorts, good mottle, heavy	24s a 30s
Zanzibar and Bombay	Pickings thin to heavy ..	6s a 21s 6d
TURMERIC, Bengal	Lean ish to fine plump finger ...	8s 4d a 9s 3d
Madras ...	Fin. fair to fine bold bright	8s 6d a 12s 6d
" ...	Mixed middling ...	10s
" ...	Bulbs	9s 9d a 10s
Cochin ...	Finger	8s 3d a 11s
VANILLOES, Bourbon, Mauritius, Seychelles, 1sts ...	Fine, cryst'ed 5 to 9 in.	17s a 2_s
2nds...	Foxy & reddish 5 to 8 in.	12s a 18s
3rds...	Lean & dry to mid. under 6 in. ...	7s a 10s
Madagascar, 4ths...	Low, foxy, inferior and pickings	6s a 7s 6d

THE

AGRICULTURAL MAGAZINE,

COLOMBO.

Added as a Supplement Monthly to the "TROPICAL AGRICULTURIST."

The following pages include the Contents of the *Agricultural Magazine* for October :—

Vol. VII.] OCTOBER, 1895. [No. 4.

CEYLON FIBRES.

THE following reports made by London experts on certain samples of Ceylon fibre sent from the School of Agriculture is rather disappointing in view of the frequently expressed opinion that there is a great future in store for Ceylon in the development of its fibre resources

The following are the samples referred to :—

(1). Fibre and rope prepared from *Sanseviera zeylanica* (S. Niyanda).

(2). Rope made from the fibre of *Furcrœa gigantea* (S. Gonegass), the common hedge plant generally referred was "Aloe."

(3). Floss from the pod of *Calatropis gigantea* (S. Wara).

(4). Fibre from *Sterculia balanghas* (S. Nawa.

Report No. 1 on the above specimens :—" We think that as commercial articles they are little wanted, the world's supply of fibre, generally, being already not only adequate but really beyond the actual consumption. Consequently all those special fibres, against which, the fibres you submit to us, would have to complete, are at the lowest point in record, and any new product coming into the market would not in any case find a very profitable market.

Sample No. 1. The fibre is too short, but is well cleaned ; a limited market might be found at present at about £8 to £9 per ton.

Samples No. 3 and 4. We can give no opinion, it is certainly useless for the fibre (rope) trade.

Sample No. 2. No market here whatever for the rope, which is very nicely made. It could only be sold for the commonest purposes, as scaffold cords, and as we have already mentioned other fibres are so low, that the English rope makers need not allow any foreign rope to compete with them.

We would not advise either fibre or rope to be exported to England, except in small quantities as a trial."

Report No. 2.—" In my opinion the fibre could be treated in England, but I could not possibly say until the fibre was tested in this country.

No. 3 sample. I cannot say as to this No. It is not silk; it looks like cotton.

I beg to say the ropes, or better called lines, look very well, and would sell here as they are if shipped in coils. All these Nos. 1 and 2 are worth about £20 per ton delivered in London.

No. 1 sample larger-sized 1 in. rope.—I have tested one of the strands three times, and this stands a breaking strain on the average of 265 lbs. test.

No. 1 sample smaller size ¾ in. rope.—I have tested one of these strands, which averages 165 lbs. test.

No. 2 sample 3 strands larger.—The larger sample tested to 280 lbs.

No. 2 sample 3 strands smaller.—Tested 224 lbs."

OCCASIONAL NOTES.

In our last issue on page 27 instead of the heading " Vines and Line Supports" read " Vines and Live Supports."

The reports on India Agave fibre as given on another page should encourage all land owners to adopt either *A. Americana* or *A. Vivipara* to the

exclusion of all hedge plants, for boundaries, with a view to supplementing their income from tea, cocao, and coconuts by growing these fibres, and at the same time checking cattle trespass and solving the difficulty about suppressing theft of prædial products! But some enterprizing person should set up a central factory for extracting the fibre by means of the most approved machinery.

We direct attention to an interesting extract referring to Weeds taken over from the *Agricultural Gazette* of New South Wales. We have ourselves written much on the subject of utilizing weeds to the best advantage by judicious treatment, instead of completely suppressing their growth under all circumstances. We know of some planters who have been bold enough to adopt the latter alternative and that with satisfactory results, but they are few in number. We commend the article referred to, to all agriculturists, and regret that owing to the limited space at our disposal we are unable to reproduce it *in extenso.*

It is satisfactory to be able to report that the experiment in Grape Culture at the School of Agriculture bids fair to be a success. About 750 rooted vines are now thriving well, and there are about as many cuttings making healthy growth. The following are the varieties being tried:—Gordo Blanco. Lady's Finger, Black Prince, Champion Muscat, Chasselas D'Or, Gross Colman, Snow Muscat Marillion, Black Ambro, Muscat of Alexandra, Black Hanbro, and White Marillion.

It is not two months yet since the vines were planted out, and many of the Gordo Blanco variety are already in fruit.

We learn through visitors and correspondents that vines are to be found nearly in all parts of the Island. We lately had the opportunity of inspecting two splendid vines in Matale, a very wet district, and on one of these counted over a hundred full bunches. A correspondent from Hangurankette writes us that he is growing purple grapes there. In Colombo, the owner of a vine in the heart of the town reckons on his R150 worth of grapes a year. All this must make M. Zanetti very hopeful about his experiment.

A small plantation of rhea fibre has been successfully established at the Colombo School of Agriculture, and the plants have stood out well against the late long and trying drought without any special attention given to them. Some demand has sprung up for cuttings, and it is likely that a few of our lowcountry landowners will give rhea a trial on a fairly extensive scale. The great advantage about rhea cultivation is that the grower has nothing more to do than to harvest his sticks once in two or three months and strip off the bark (which can be sold in Colombo) for shipment to London, where the extraction of the valuable fibre is now facilitated by chemical treatment, which, however, is a close secret. On making enquiries as to prices in Colombo, we were informed by one firm that they were prepared to buy rhea bark in any quantities of not less than 5 tons in pressed bales at R9 or R10 per cwt. free on board. From another source the offer came of R150 per ton, nothing being said as to baling or placing on board.

As a general rule $2\frac{1}{2}$ gallons of milk are required to produce one pound of butter. The market value of good cow's milk in Colombo is about 20 cts. per bottle of 26 oz. ("guaranteed" pure milk generally fetches 22 cents and sometimes more), so that it would take about R3 worth of milk to produce one pound of butter; but the prices of butter is about R1·50 per lb., and to cover cost of production (including labour) and leave a small profit—sufficient to give a fair interest on outlay—the separated milk should fetch at least 12 cents per bottle. And if householders are wise they should gladly pay that price for milk separated by a machine than give 15 and 16 cents for the ordinary milk vendor's stuff. But, unfortunately, separated milk has no recognised value with us yet.

RAINFALL TAKEN AT THE SCHOOL OF AGRICULTURE DURING THE MONTH OF SEPTEMBER, 1895.

1	Sunday	·02	19	Thursday	Nil
2	Monday	·12	20	Friday	·29
3	Tuesday	Nil	21	Saturday	·03
4	Wednesday	Nil	22	Sunday	·11
5	Thursday	·07	23	Monday	·07
6	Friday	·25	24	Tuesday	·02
7	Saturday	·43	25	Wednesday	·01
8	Sunday	Nil	26	Thursday	Nil
9	Monday	Nil	27	Friday	·25
10	Tuesday	Nil	28	Saturday	·80
11	Wednesday	Nil	29	Sunday	·05
12	Thursday	Nil	30	Monday	·88
13	Friday	·09	1	Tuesday	·34
14	Saturday	·26			
15	Sunday	·38		Total	4·60
16	Monday	·15			
17	Tuesday	Nil		Mean	·15
18	Wednesday	Nil			

Greatest amount of rainfall in any 24 hours on the 30th instant, ·88 inches.

Recorded by W. O. ROWLANDS.

THE SAFFLOWER.

(Carthamus Tinctorius.)

There are many plants cultivated in in India which yield valuable dyestuffs, but there are also others growing wild which, if taken in hand, are capable of producing useful dyes. It cannot be denied that vegetable dyes are being to a great extent replaced by the analine dyes, the products of coal tar. This is mainly due to the cheapness of the dyes and the regularity of supply which can always be depended upon. A manufacturer who uses a particular substance is put to a deal of trouble and expenses if after a time there is any interruption in the supply of that substance. He adopts his machinery and appliances to the product which he is using. His workmen get used to the handling and

manipulation of their materials in a special way and thereby gain a sort of dexterity which is of great importance, in that work is done expedetiously. The few vegetable dyes that have been in use in India have met with no demand owing to the want of a regular supply and uniformity in quality. These two important requisites could be met only by a systematic process of cultivation and preparation. However gloomy the future may be for indigenous dyestuffs, there is some consolation in the fact, that vegetable dyes are superior in quality to any obtained artificially. The former are extremely well adapted for the purpose of dyeing costly materials and they are devoid of the poisonous properties possessed by many artificial dyes. If a systematic method of cultivation be adopted, if technical knowledge which at the present day is indispensable in every walk of life is employed in their preparation, and if the chemist's aid is called in at the proper time, there is no reason why the vegetable dyes should not hold their own and pay their way.

Carthamus tinctorius yields the carthamine dye of the English. It is called by the Germans *safran*, and by the Spanish *cartamo*. In Russia the dye is known as *polerroi* and in India *kusumba*.

There are two species of Carthamus known to botanists, one a wild species, the *Carthamus oxyacantha*, met with in the North-Western Provinces and the Panjab, and other *C. tinctorius* or the true Carthamin grown largely in India, Spain, Germany, Hungary, Italy and Russia, and even in South America and the Sunda Islands. The plant is also cultivated to a certain extent in China and Egypt.

Carthamus tinctorius is an annual herbaceous plant with large orange-coloured flower heads. The history of the plant is little known, as the plant is no where found in its wild state. De Candolle believes that the grave clothes of ancient Egypt were dyed with Carthamine. It is said the plant was introduced to China in the second centuy B.C. Indians at one time were not aware of the presence of the valuable red dye, but grew it for its evanescent yellow dye and for the oily seeds it gave.

EARTH-VELOS.

This is a preparation patented by Strawsons Limited, the well-known firm whose name has been long associated with insecticides and machines for distributing them. The preparation is in the form of a powder, and special forms of it are known as Hop-velos, Vine-velos and Tea-velos, their use being intended particularly for ground pests of whatever nature. Earth-velos is said to be suitable for all crops, requiring neither skilled labour nor expensive machinery for its use. It is sufficient to spread it evenly over the soil, and hoe or plough in at the time of ordinary cultivation. It destroys wire-worms, leather-jackets, grubs, millepedes, beetles, aphides and all insect life in the soil—preventing insects from entering the soil to hibernate or change into chrysalids and thence into grubs, and destroying those already there. For fruit gardens, the ground may be strewn over with the powder by means of a distributor such as Strawson's "Coronette" (specially designed for dealing with insecticide powders, and costing only 30 shillings) at the rate of 1 or 2 cwts. per acre. About three dressings a year are advised. Where the roots of trees are deep and difficult of access a hole from 8 to 16 inches deep may be made with a stake and a teaspoonful of Earth-velos put in, the top of the hole being closed by means of the heel. Great success appears to have attended the use of this preparation against phyloxera in vines. The effect is in some respects like Bisulphide of carbon, but the preparation is safer and cheaper, being non-poisonous. Further, it can be kept any length of time if covered, but should be preserved dry and never mixed with water. Being combustible, however, no fire or artificial light should be brought in contact with it. Earth-velos is sold in packages of one shilling, two and six pence, and five shillings, or in large quantities at 32 shillings a cwt. or £28 per ton. We believe that the Eastern Produce and Estates Company is the agency for Messrs. Strawson, whose London address is 77, Queen Victoria Street, London, E.C.

INDIAN CORN AS HUMAN FOOD.

Indian corn—on what grounds, it is difficult to explain—is little fancied as a human food in many parts of the world where it could be cultivated with success. Probably there is a misconception as to its proper nutritive value.

In a bulletin issued by the Department of Agriculture, Brisbane, it is stated that excepting sugar cane, maize is the most important crop grown in Queensland—about one-half of all the cultivated land of the colony being devoted to it. The average yield per acre for 1894 is given as 25·8 bushels, which is higher than is obtained in the United States, the greatest of maize-growing countries. Dr. Wiley, chemist of the United States Department of Agriculture furnishes a table of analysis of leading cereal grains, which serves to show the chemical relations that maize sustains to other bread grains, and clearly indicates the value of the different foods, based upon the digestible food elements which they contain. The following is the table:—

	Hulled Oats.	Wheat.	Rye.	Barley.	Maize.
Water ...	6·93	10·27	8·67	6·53	10·04
Ash	2·15	1·84	2·09	2·89	1·52
Oil or Fat ...	8·14	2·16	1·94	2·68	5·20
Digestible carbohydrates ...	67·09	71·98	74·52	72·77	70·69
Crude carbohydrates ...	1·38	1·80	1·46	3·80	2·09
Albuminoids ...	14·31	11·95	11·32	11·33	10·46

[We might here add the following analysis of rice for purposes of comparison:—Water 13·0, flesh-formers 6·5, starch &c. 80·0.]

Dr. Wiley, commenting on the above table, says: "As indicated by the above analyses, maize is fully equal in value as a food to any of the cereals, making up in its contents of fat any deficiency which might be noticed in its nitrogenous matters and digestible carbohydrates. This conclusion, however, as to the food value of maize, does not rest alone upon the comparison of analytical data. The long years of use

of this article, by man and beast, has shown its high character. Whether to be used as food for producing muscle for labour, or as a means of fattening animals, it has been found to be of superior value to any of the other cereals produced in the United States."

Another reason that may be assigned for the prejudice against Indian corn as an article of human food is the fact that few know how to prepare it so as to form a palatable diet. Professor Shelton of Queensland condemns the grinding of maize into a fine powder as in the case of wheat, and states that maize flour in this condition is quickly converted by cooking into a sticky, pasty mass, which is both unpalatable and indigestible. Maize, he says, should be ground into an even and rather coarse meal—not flour—which, when cooked, gives the light granular bread and cakes seen in maize-consuming countries. He further recommends that the maize should be thoroughly kiln-dried before grinding, and the germ afterwards removed from the grain, explaining that this will give a better and more uniform meal that will keep without becoming rancid.

DAIRY PRODUCE.

The following extracts are from a valuable and exhaustive paper read by Surgeon-Captain P. W. O'Gorman before the Indian Medical Congress:—

If there be any article of diet in India that needs more than any other the earliest and most stringent regulations to be enforced against disease and adulteration, I claim them for our dairy produce—produce on which by far the largest proportion of our population, European and native, of all castes and classes—infants, children, invalids—subsit for long periods together, and these the most helpless and voiceless. Time after time is disease being specially traced to this produce: lives are being sacrificed every day, and outcries arise from every station in India against the present *régime*. The time is, therefore, ripe for legislation. All European countries have laws in force against adulteration of food, and the last were passed by the Senate of the United States in 1892, under the name of the "Pure Food Bill."

From the labours of Pasteur, Koch, Klein and others, much light has been thrown on the bacteriology of milk products. Schenk describes 25 pathogenic and saprophytic micro-organisms, but several others can be added. Milk may be contaminated either during milking or in the subsequent manipulation, and may exhale an odour owing to the substances so acquired (*Bacillus fœtidus lactis*), or become slimy or stringy (*Bacillus lactis viscosus*), or take on a bitter or an acid (*B. dahii.* Hankin), sweetish, putrid taste (*Bacillus fœtidus lactis*) or its colour may turn yellow, blue (*B. cyanogenes,*) or red (*B. lactis erythrogenes*). Moreover, various pathogenic micro-organisms (parasitic) may be imparted to milk from the diseased animal furnishing it. Many dangerous organisms, however, may exist in it or in its products without exciting notice.

The following 13 diseases have been discovered to be due to milk contaminated, either directly or indirectly, by specific germs, viz:—

Tuberculosis
Typhoid or Enteric Fever
Cholera.
Diarrhœa (Enteritis)
Vomiting and Purging (ptomaine poisoning.)
Gastritis.
Dyspepsia (acidity, etc.)
Stomatitis and Apthœ.
Diphtheria.
Scarlatina.
Foot-and-mouth disease (eczema epizotica).
Peculiar febrile symptoms.
Peculiar "milk sickness" (vomiting, collapse, etc., from cows suffering from the "trembles.")

To these may very probably be added several others, including dysentery, malarial fevers, small-pox, rinderpest, pleuro-pneumonia, actinomycosis, and anthrax due to direct contamination or adulteration with befouled water, etc. Milk may also be contaminated by inflammatory products in nearly every disease to which the cow is subject. Professor Brown cites an instance where, in a case of septic mammitis, a milker actually milked into a pail a quarter of the contents of the udder, from which came nothing but pus, under the impression that it was peculiarly rich milk.

It ought also to be specially borne in mind that "*cheap*" and "*nasty*" are *convertible terms in dairy produce.* I wish to emphasise this fact that it is *absolutely impossible* to get good, pure, wholesome dairy produce at the *present prevailing rates.* They ought most certainly to be raised from one-third to one-half higher.

I have now, I think, made out a very strong case for legislative interference in the interests of both natives and Europeans. The Municipal Act should be amended and strengthened, and rigid inspection and regulations enforced on all the points I have indicated. And as the country at large is not yet ripe for such measures, I beg to earnestly urge that the amended Adulteration and Dairy Produce sections of the Municipal Act or a new separate *Pure Food Act* be extended to all cantonments, large railway stations, and all municipal towns, and perhaps subdivisional headquarters of districts. All inspectors to be properly qualified, and be Europeans in large towns and cantonments. Another thing I would beg to urge on Government would be the direct encouragement, in every possible way, of *European private enterprise in Dairy farming*, in preference to any Commissariat monopoly of such, as otherwise the civil population can never hope to enjoy the untold advantages of modern dairying.

WATER MEASURES AND R INFALL.

In connection with various operations in practical farming, conservation of water, rainfall and irrigation, the following measures and quantities, given in the Agricultural Journal of Cape Colony, will be found useful:—

Water Measure.

One Imperial gallon of pure water weighs 10 lbs.
" " " contains 277·274 cubic in.
1 cubic ft. contains nearly 6¼ Imperial galls. (6·23)
" " of water weight 62¼ lbs. (62·212)
" yard contains 168¾ gallons,

1 Imperial pint of water weighs $1\frac{1}{4}$ lbs.
„ „ contains 20 fluid ounces.
6 wine bottles are reckoned to contain one gallon of water, or $26\frac{3}{4}$ ounces each.

Rainfall and Irrigation.

1 inch of rain is 144 cubic inches to a square foot.
„ „ 1,296 „ „ or $4\frac{1}{2}$ galls. to the sq. yard.
„ „ 22,622 galls. to the acre (4,840 sq. yds.)
„ „ 113 tons to the acre.
„ „ $14\frac{1}{2}$ million galls. to the sq. mile.

By an inch of rain is understood as much rain as would form a sheet of water one inch deep over the surface of the ground, if none of it soaked into the soil or ran off

An inch of rain falling on a roof will be after the rate of a little more than half a gallon to the square foot. As the slope of the roof makes no difference, a house roof will, when an inch of rain falls, collect a half gallon of water for every square foot of area the house stand upon. So if a house is 40 ft. long and 30 ft. wide, the catchment area will be 1,200 square feet, and an inch of rainfall will supply to a cistern 600 gallons, allowing some 15 gallons for waste and evaporation. If there is 20 inches of rainfall during the year, then with proper spouting and cistern room, the abovementioned roof or area will furnish during the year 12,000 gallons of water.

An inch of rain over an acre of 4,840 square yards being 22,622 gallons to the acre, it is a matter of some interest to get the approximate quantity required for irrigating.

As I find that usually, even in a dry season, after 2 inches of rain have fallen, the land can be ploughed, I have suggested that 50,000 (fifty thousand) gallons be accepted as an estimate, the quantity required for irrigating an acre of land once.

Of course more or less water will be required according to the nature or staple of the soil, its dryness and powers of absorption. But still it is well to have a definite or approximate standard of measurement as to the quantity of water required, to be delivered by a pipe or furrow, or, it may be pumped for irrigation.

In Spain the regulation quantity of water for one irrigation is $2\frac{3}{4}$ inches. This would be 52,210 gallons per acre.

It has been found in practice that one good watering is much better than two or three light ones. For unless the water soaks some way into the ground, it does not enable the crop to feed on the plant food in the soil. If only a little below the surface is kept moist, the roots of the plants will be encouraged to grow near the surface and suffer from the heat and drought, instead of penetrating deep into the soil and sub-soil.

Measuring the delivery of water as to quantity supplied in a given time, has been a question of some consideration, enquiry, and experiment.

The fact or difficulty to be dealt with is that the quantity of water delivered over a weir or through a pipe or any other kind of aperture *constantly* varies with depth or pressure of the head of water whence it is derived.

For instance, the quantity of water which is delivered through a four-inch pipe with *two* feet of water above the orifice will be 354 gallons per minute, while the quantity delivered through the same pipe with a head of *one* foot of water would be only 250 gallons per minute, being a difference of 1,240 gallons per hour.

So the problem to be solved was to invent or arrange some plan by which the water should always be delivered under the same pressure which would be secured if always the same *head* or depth could be maintained.

In Italy this water measurer is called a *module*. The principle of which is, that a stone trough is filled from the canal, river or spring, in which trough or module the water is always kept at one state of fulness or level, and so maintains the same pressure and consequently delivers exactly the same quantity of water at all times and in perpetuity.

In the United States of America the law of water delivery provides for the construction of a "module."

Water is sold by the *square inch*, that is the quantity which will be delivered by each square inch of the aperture through which the water flows. An orifice one foot long and two inches high, thus delivering 24 inches.

The law provides that "water sold by the inch by any individual or corporation shall be measured as follows, to wit, every inch shall be considered equal to an inch square delivery orifice under a five-inch pressure, and the five-inch pressure shall be from the top of the orifice of the box (module to the surface of the water." This will give a constant pressure of four inches.

A module thus constructed, and with this pressure, will deliver through *every square inch* of the orifice $7\frac{1}{2}$ gallons (Imperial) every minute. and 450 gallons per hour.

A four-inch pipe under the same pressure will deliver 94 gallons per minute.

LAWS OF CEYLON RELATING TO AGRICULTURE.

CHAPTER X.—*Miscellaneous.*

1. As it is necessary to have channels of drainage, ponds, and tanks unobstructed, plans or surveys, made under the authority of the Surveyor-General, in which encroachments shall appear, shall be considered conclusive, unless satisfactory proof to the contrary shall be established.

2. It shall be lawful for the Government Agent to order verbally or in writing, any person obstructing or encroaching upon any watercourse, pond or tank within his Province, to remove such obstruction or encroachment, or to abate it. And if the person who is so ordered sh ll fail to comply with the same within a reasonable time, or if there be any doubt as to who is the proper person to whom such order should be given, the Government Agent may cause such obstruction to be removed; and the Government Agent, or any person authorised by him in writing, may use all reasonable means such as may be necessary for such removal The Government Agent may recover the costs *bona fide* incurred in effecting such removal from the party whose non-compliance with orders caused such costs, in manner provided in Chapter IX. of this Ordinance.

3. If any person by clearing or draining any land, by doing any act whatsoever on the same, shall cause any channel, watercourse, or ela used for irrigation purposes, to be blocked up, or obstructed by silt, earth, or other substance, it shall be lawful for the Government Agent of the

Province within which such land may be situate, to give order to the owner or occupant thereof, by written notice, within a reasonable time to be specified in such notice to

(*a*.) Remove forthwith any such silt, earth, or other substance.

(*b*.) Provide all such drains, pipes, and other works as may be necessary to carry off the water from such land to some point where it can be passed over or under such channel, watercourse or ela.

4. A copy of such notice shall be affixed in some conspicuous place on such land, and another copy shall be sent by registered letter through the post, addressed to such owner or occupant, and if so sent shall be deemed to have been served at the time when the letter containing the same would be delivered in the ordinary course of post.

5. In proving such service, it shall be sufficient to prove that the letter was properly addressed and registered at the Post Office.

AGAVE FIBRE.

The following is a report by Mr. Collyer, the fibre expert, on two samples of Agave fibre sent from India—one from Saharanpur, N.W. Provinces, the other from Coimbatore, Madras Presidency.

"Saharanpur fibre, length 40" to 60", fair light colour, good strength, fairly clean, rather fine flattish fibre, similar in character but rather superior to Furcrœa gigantea, equal for some purposes to fair current Manilla hemp, but finer in fibre. Value £22 to £24 per ton.

Coimbatore fibre, length, cut ends 24" to 30," fair, yellowish colour, well cleaned cut ends, good strength, good roping quality, but short. Value £20 to £22 per ton.

Agave fibre, equal in quality to either of the above samples, would sell readily in any quantity at slightly under the fair current Manilla hemp (£23 to £24), and its growth should be encouraged to the utmost."

The plant, *Agave americana*, is as a rule not grown for its fibre. In Upper India it is generally used as a hedge plant to prevent cattle trespass. It is said to grow on any soil, but that best suited is a mixture of clay and sand that may be described as a rich heavy alluvial loam. The plant grows both in the open (as along the Madras Railway Line,) as well as under shade, but best in the former position. In the Saharanpur sample the fibre was extracted immediately after cutting the leaves, by beating with a wooden mallet, washing out the pulp, and drying in the sun. In Coimbatore the fibre is generally extracted at once, but sometimes a day or two after cutting. The extraction is done by hand, either by maceration or scraping. The fibre got by scraping without washing or bleaching is very clean and free from pulp, though not very long: that by maceration is longer but not nearly so clean.

Mr. Gollan, Superintendent of Saharanpur Gardens, states that a plant of average age, or say from 6 to 8 years old, will annually produce from 12 to 15 mature leaves. The average weight of a fresh leaf of *A. americana* is $2\frac{3}{4}$ lb., in the case of *A. vivipara* $\frac{1}{2}$ lb. The fibre of the latter though shorter is considered better, and the plant superior for hedges.

The Coimbatore plant is possibly *A. americana*, but it is to be feared that this species and *A. vivipara* are often confused, and hence probably the reports of varying quality in the samples of Agave fibre submitted to experts.

Aloe fibre is also produced from *A. vivipara* in the Bombay Presidency. The plant grows wild, but is not cultivated specially for fibre. It is of slow growth, and takes about 2 years before the leaf can be cut for fibre.

The following is an extract from the report of Mr. D. Morris of Kew Gardens:—

"It is evident, however, that the plants exists in Bombay in sufficient quantity to supply several hundred tons of fibre received in this country. After a consideration of the facts noted below, it might be found advisable to cultivate this species of Agave on waste lands in Bombay entirely for the sake of its fibre or the sisal hemp plant, *Agava rigida, var. Sisalana*, might be introduced on a large scale. This latter yields the most valuable fibre of any desired from species of Agave, and there is little doubt it would thrive equally well in India. The important fibre industry of Yucatan, created entirely within the last twenty years, is now of the annual value of about three-quarters of a million sterling; India has, therefore, good grounds for devoting attention to an industry which so far has established itself on a moderate scale in spite of adverse circumstances.

"In order to test the quality of the fibre produced by *Agave vivipara* when cleaned by machines similar to those in use for the preparation of Sisal-hemp in Yucatan and West Indies, a few of the broken leaves about a foot to two feet in length, taken from the larger plant received at Kew, were forwarded to the Death's Fibre Machine Company, 147, Leadenhall Street, E.C."

The sample of fibre produced by passing the leaves through the Death Machine as well as that cleared by hand in Bombay were examined by Messrs. Ide & Christie; and thier report showed a great difference in quality and value between the two. Mr. Morris continues:

"The value of the machine-cleaned fibre ranges, according to length, from £25 to £30 per ton. The ordinary Bombay aloe fibre, cleaned by hand, is worth from £5 to £12 per ton. These figures fully bear out the opinion offered in my letter of the 21st February, 1887, that the Bombay aloe fibre industry was capable of being greatly improved. At the present time (1890), there is in stock in this country 1,000 tons of Bombay aloe fibre, which, prepared roughly by hand, will only realise (if sold) about £8,000, a price that will probably hardly pay expenses. If this fibre had been cleaned by machinery and presented in the condition of the sample produced by the Death machine, it would realise about £27,000, or more than three times its present value. It appears possible, therefore, without any extension of the present Agave plants in Bombay, to increase, to a very appreciable extent, the returns on the shipment of Aloe fibre from that Presidency. The following is the report of Messrs. Ide & Christie on the two samples of Aloe fibre mentioned above:—

We have your favour of the 4th inst., (February 1890,) with samples of fibre extracted by Death's process from the leaves of *Agave vivipara*. This

is an excellent fibre, of fair strength, fine colour (which however, may change somewhat under continued exposure to the air): and were it *three* times as long would be worth £30 per ton today in London; if twice as long, £27; and, as it is, it may be valued at £25.

The ordinary Bombay aloe of commerce presents a very different appearance to your specimen. Its value today is good, £12; common £5 per ton.

Sir Fredrick Abel, Secretary and Director of the Imperial Institute, considers that to the process of "retting" or steeping the leaves in water may probably be due the inferior quality of fibre, as it is a well-known fact that monocotyledonous fibres will not, as a general rule, bear retting. He further writes:—

It may, therefore, be of importance to the Bombay aloe fibre trade to bring to the notice of the authorities in the Agricultural Department of the Government of Bombay the fact that a better fibre than that usually supplied to the market as Bombay aloe has been obtained from Indian-grown Agaves. This was shown in the report of a fibre expert."

POULTRY NOTES.

According to *Town and Country*, M. Bournouf recommends in *Le Belier*, a French Journal of Agriculture, the following method of preserving eggs: Dissolve in two-thirds of warm olive oil one-third of bees-wax, and cover each egg completely with a thin layer of this pomade with the end of the finger. The egg-shell by degrees absorbs the oil, and each of its pores becomes filled with the wax, which hermetically seals them. M. Bournouf affirms that he has eaten eggs kept for two years in this manner in a place not exposed to too great extremes of temperature. He thinks that the germ may also in the same manner be preserved for a considerable time.

Dr. Ropenshaw in Poultry states, on the other hand, that all plans for preserving eggs are more or less unreliable, because the eggs experimented with are, so to speak, alive, or contain a living germ, which can only last for a certain time unless developed by incubation into a higher form of life, when the egg necessarily becomes "bad." He draws attention to the facts that unfertilized eggs are after being subjected to incubation found to be perfectly fresh, while fertilized eggs in which the germ has perished are found to be putrid.

"If a poultry-keeper wants to preserve eggs," says Dr. Ropenshaw, "let him not keep a cock. The hens will lay just as well without one (in my experience better), and the eggs will keep if carefully rubbed over with fresh butter and then put in a cool place, not heaped up one on top of another, but placed side by side on a shelf previously covered with a thin layer of sawdust or dry moss (not hay, which has a strong smell; or bran, which is apt to get musty): if they are turned half round now and then they will remain perfectly good for six months, possibly longer, but I have only tested them for half a year, and cannot speak positively beyond that I consider the buttering a much better plan than pickling or soaking in lime water, for if the butter is fresh it imparts no taste whatever to the preserved eggs, which at the expiration of six months cannot be distinguished when cooked from eggs one to three days old. But they must be unfertilized eggs to begin with, for those that contain a living germ will not keep, no matter what method is adopted to preserve them. Moreover, maiden hens lay far more eggs then mated ones, and are not nearly so frequently 'broody.'"

Turkey hens are to be preferred for hatching eggs for many reasons. As their period of incubation is longer, there is more chance of constant sitting, and they make very careful and attentive mothers. They will easily cover from eighteen to twenty hen-eggs, and will continue quite useful for five or six years.

A little powdered sulphur or carbolic should be sprinkled in the nests made for hatching this will keep off vermin. In very dry weather it is advisable to sprinkle the eggs with warm water about three days before they are due to hatch out. The average time required for hatching out the eggs of the different kinds of poultry are

Ordinary fowls	...	21 days.
Ducks	... ...	28 "
Turkeys	... ...	26 to 29 days.
Geese	... ...	30 "

The two commonest diseases among fowl are Roup and Diarrhœa. The symptoms of roup are running at the nose and sneezing. Immediately these symptoms are observed the bird should be isolated. A tea spoonful of Epsom salts should be given immediately, and when this has acted the head and throat should be washed with diluted kerosine (two parts water to one part kerosine). Soft food only in a crumbly condition should be fed, and if the attack has been taken promptly the bird should recover within a week. Care, however, must be taken to watch for symptoms among the healthy birds, for if the disease is found to have affected several, it would be better to shift all the birds into another pen, and the infected pen should be closed and properly disinfected.

Diarrhœa is often caused by the drinking water being left in the sun, and also by feeding the soft food in a sloppy condition. If promptly attended to, a case may generally be cured by feeding a little boiled rice sprinkled with prepared chalk. If there appears a tendency amongst the birds in the pen to contract diarrhœa, a few drops of tincture of iron should be put in the drinking water, in addition to giving rice and chalk.

WEEDS.

The plants which endeavour to take possession of our fields, and are apt to choke the struggling crops (or apologies for such) are called "weeds," are despised, detested, and persecuted as "exhausters," while they really represent the means by which nature endeavours to replenish the exchequer, and to restore the productive power of the soil, of which it has been deprived by man's

inconsiderate actions. For what does he do? By ploughing, &c., he turns up the lower actively living soil, and brings it to the surface, while at the same time he turns down the dried-up dead surface soil, burying with it the dead and living vegetation, which under normal conditions is here revivified, and adds to the fertility the products of last season's sun-force in the form of carbon and organically combined saline compounds (manures), which should be supplemented by fertilisers to make up for that portion removed in the form of grain, hay, fodder, &c., or washed out by rain. So far, it is all right. If the ground be sown while moist at slight depths, as is the case under cool and moist atmospheric condition (old world countries mostly), the young plants rapidly cover the surface and shelter it from the sun's rays. It then remains moist, and is thus preserved in constant vital activity, unless frozen. Then all manures, fertilisers, &c, can and do act to their full extent, being laid hold of by the natural organic and chemical forces, and made available for the higher plant life, and absorbed for man's advantage. In this way no deterioration or impoverishment follows or need follow, but instead regular improvement. In hot and dry countries like ours, other conditions prevail, but the same operations are persisted in mechanically, and result not in the same beneficial effects, but in constant deterioration proved by continually decreasing averages of our grain and vegetable crops, notwithstanding increased care, and the adoption of more or less scientific methods. We plough and fallow like our European forefathers. Moreover, before doing so, we feed off all the weeds and stubble, or rake them together and burn them, leaving the ashes and cinders to be blown away by the winds, and to be wased away by the floods, and leaving the soil as bare as a floor, and exposed to the glowing heat of the sun, which bakes the surface as hard as a rock and kills all the agents of fertility beneath, except the seeds of mischievous weeds, and the eggs of injurious insects. By fallowing in spring we loosen and bare the soil more mischievously still, under the mistaken ideas, that "it needs rest"; that weeds exhaust it; that the soil requires to be aërated, and that to make the air circulate the soil needs breaking up, and exposing to the sun, &c. The last is only necessary in soil reclaimed from morasses and swamps, when the soil, on the retreating of the water becomes compressed into a stonelike, airless, homogeneous substance by atmospheric pressure from above. There is some truth in all, but just enough to conceal the fallacies.

Acting on such fallacious ideas, we only succeed in converting our fields into deserts and blasting our future, for the causes which operated hitherto in reducing the 50 bushels per acre in early years to 5 at present, are still acting, and will reduce the 5 to less still, till not even grass or weeds will be able to exist. It is not enough to study books, or to consult "authorities" by the score, we must study nature herself. Word-knowledge is apt to prove delusive, thing-knowledge alone can guide us nearer and nearer to truth, which only he could fully gauge, who knew everything. This no man, least of all the multitude, can attain. The soil, as all other things, must not be merely considered from one aspect, but from as many as present themselves. What may be perfectly true from one point of view, or under one set of conditions in one country, is, or may not be so under another elsewhere, nor does it matter how many experts or authorities (text-boooks included) entertain a belief, if it be false. We must always be ready to bring our beliefs and opinions into line with nature's laws if we desire to prosper. Look about you then for nature's facts. Do you find that the richest ground which is bare, or that which is reeking with plant life. Does the latter ever get rest? Certainly not, and yet its fertility and richness augment from year to year. Why should this be? Because the plants grown and growing there convert more and more of the purely mineral and chemical ingredients into sub-organic ones by the aid of worms, nitro-bacteria, &c., bringing out the actively fertile qualities more and more, and at the same time shelter the surface from being heated and dried up. Moreover, the growing plants and their dead remains arrest the flow of rain-water, compel it to move slowly, and conduct a very large proportion through root and worm holes to the subsoil, laying up a stock more or less in excess of their needs under ordinary circumstances. You can prove this any day for yourself. Dig in densely weedy or stubby soil, and measure the depth at which perceptible moisture is met with in summer, and you will find it at much less depth than in a large area of bare ground in constitutionally loose soil, at less than in hard-baked, nay, in the latter cases you may get through the moist soil into permanently dry lower down, a state of affairs perhaps never met with in plant-covered areas. Only such soil as had become waterlogged at some time (swamps, river-flats, &c.) when dried, needs breaking up and aërating by exposure, not naturally loose and porous soil. To render hard-baking soil loose no fallowing, &c., will permanently avail. That object can only be attained by the abundant addition of carbonaceous substances (stable manure, &c.), and lime or sand. The lime need not be quicklime, but ordinary lime stone crushed or ground, the smaller the quicker in action. Our customary farming methods, in combination with our climate, do their level best to withdraw both carbon and lime from the soil. The former is burnt up gradually by the long exposure of the bare, broken-up fields to the fierce heat of summer. The latter is washed out in the form of bicarbonate by the floods of winter, carried to sea, or into the deep porous subsoil, beyond reach of the roots of cereals, vegetables, or root crops finally. Why wonder then at the decreasing fertility? The fruitful soil has become sterile by losing the whole or a large part of two most essential constituents, is losing more still. Sand and clay, with a proportion of useless stones, and the colour remain, although even in this the black has given more or less way to the red, where carbon alone, and not mangaese, deepens it.

GENERAL ITEMS.

Town and country says with reference to mulching and watering fruit trees:—A dry season is very hard on fruit trees as well as on other plants. In such a season mulching is of the greatest benefit to all kinds of plants. Any vegetable matter will do for a mulch, but of course the most nutritious grasses and fodder plants answer best. Litter of all kinds more or

less impregnated with manure is especially valuable, as it will not only help to retain the moisture in the soil, but also manure it. Weeds, so long as they do not contain too much seed, brush wood, and muck of all descriptions will answer very well as a mulch. The depth of a mulch may vary with the conditions of the soil and the quantity of material at hand. Some people spread mulch all over the surface of their land to a depth of one foot, but perhaps a depth of from three to six inches is about the average. Water may be most beneficially applied in connection with mulch. Some people apply it by simply pouring it over the top of the mulch, and letting it soak through to the soil, while others remove the mulch from around the tree, open a small trench some five or six feet from the tree, and pour in a quantity of water, permitting it to soak into the soil and replacing the mulch. By the latter method a smaller quantity of water will probably suffice to moisten the soil than if poured over the mulch, as in the latter case a considerable quantity might be lost through evaporation, but if the mulch is kept moist it will decay all the quicker, and furnish its manurial ingredients to the soil. One of the chief objects of mulching is, however, to shade the soil from the sun's rays, and keep it from cracking and drying up. It also has a powerful capillary action in drawing the subsoil water to the surface and so keeping the surface moist, thus furnishing needful water to the lateral rootlets of the plant.

"Coal ashes," says the Editor of the Cape Agricultural Journal, "contain a small quantity of potash. Wood ashes vary in the quantity of potash they contain from 4 up to 10 per cent. .... All the sources of supply of this material should be most carefully husbanded and kept dry, as rain will soon wash all the potash out of ashes and under them almost valueless. Where lime is burnt with wood, the mixture of lime and ashes produced in the process will be useful for trees and crops. One of the principal sources of potash for manure is German kainit worth in London about £2 10s per ton, and containing, in the best quality, about 14 per cent of potash."

The *N.S.W. Agricultural Gazette* refers to a warning that comes from America as to a much-advertised so-called fodder plant known as sacaline. This is a polygonum, and, as European and American seedsmen's catalogues reach this country, it is just as well to take time by the forelock, and warn searchers after novelty against any extensive trial of this plant. It is stated that none of the more conservative seedsmen include it in their lists, and the reason of this is probably fully explained in the following opinion of it by the head man of one of the largest seed firms in Philadelphia. He says:—"Look out! for you will be terribly disappointed if you expect to realise the hopes that the glowing descriptions from Europe would seem to warrant. In a couple of years they will make roots the thickness of a man's arm, circling and running in all directions through the ground. When once the plants are established, you may try with all your might, but you cannot destroy them; they simply laugh at you, and grow so much the stronger. Farmers, do you want to spoil and infest your land? Then plant polygonum (sacaline)."

Never add lime to a manure containing nitrogen; and when lime has been applied to the land, do not use such manures until about three weeks afterwards.